

# NATIONAL HISTORIC LANDMARK NOMINATION

NPS Form 10-900

USDI/NPS NRHP Registration Form (Rev. 8-86)

OMB No. 1024-0018

## RICHARDS AND GODDARD BUILDINGS

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### 1. NAME OF PROPERTY

Historic Name: Alfred Newton Richards Medical Research Laboratories and David Goddard Laboratories Buildings

Other Name/Site Number: Biology Building (for Goddard Laboratories)

### 2. LOCATION

Street & Number: 3700-3710 Hamilton Walk, University of Pennsylvania

Not for publication: N/A

City/Town: Philadelphia

Vicinity: N/A

State: PA

County: Philadelphia

Code: 101

Zip Code: 19104

### 3. CLASSIFICATION

#### Ownership of Property

Private: X

Public-Local:    

Public-State:    

Public-Federal:    

#### Category of Property

Building(s): X

District:    

Site:    

Structure:    

Object:    

#### Number of Resources within Property

##### Contributing

2

   

   

   

2

##### Noncontributing

    buildings

    sites

    structures

    objects

0 Total

Number of Contributing Resources Previously Listed in the National Register: 1

Name of Related Multiple Property Listing: N/A

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### **4. STATE/FEDERAL AGENCY CERTIFICATION**

As the designated authority under the National Historic Preservation Act of 1966, as amended, I hereby certify that this \_\_\_\_ nomination \_\_\_\_ request for determination of eligibility meets the documentation standards for registering properties in the National Register of Historic Places and meets the procedural and professional requirements set forth in 36 CFR Part 60. In my opinion, the property \_\_\_\_ meets \_\_\_\_ does not meet the National Register Criteria.

\_\_\_\_\_  
Signature of Certifying Official

\_\_\_\_\_  
Date

\_\_\_\_\_  
State or Federal Agency and Bureau

In my opinion, the property \_\_\_\_ meets \_\_\_\_ does not meet the National Register criteria.

\_\_\_\_\_  
Signature of Commenting or Other Official

\_\_\_\_\_  
Date

\_\_\_\_\_  
State or Federal Agency and Bureau

### **5. NATIONAL PARK SERVICE CERTIFICATION**

I hereby certify that this property is:

- \_\_\_\_ Entered in the National Register
- \_\_\_\_ Determined eligible for the National Register
- \_\_\_\_ Determined not eligible for the National Register
- \_\_\_\_ Removed from the National Register
- \_\_\_\_ Other (explain):

\_\_\_\_\_  
Signature of Keeper

\_\_\_\_\_  
Date of Action

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### **6. FUNCTION OR USE**

Historic:	Education	Sub:	Research facility
	Landscape	Sub:	Plaza
Current:	Education	Sub:	Research
	Landscape	Sub:	Plaza

### **7. DESCRIPTION**

ARCHITECTURAL CLASSIFICATION: Modern Movement

#### **MATERIALS:**

Foundation:	Reinforced concrete
Walls:	Reinforced concrete, brick
Roof:	Flat
Other:	Granite

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### **Summary**

The Alfred Newton Richards Medical Research Laboratories and David Goddard Laboratories (a single design project) are nationally significant as one of the most important projects of architect Louis I. Kahn's (1901-1974) influential career. Designed and built between 1957 and 1965, the buildings were almost immediately and widely recognized as an important design alternative to the International Modernist glass box that dominated American commercial and institutional architectural style at mid-century. Kahn's approach in these buildings to architectural materials and to building organization, as well as his positive response to history and to physical context, all become nationally influential aspects of his work. Even before the project was completed, it was being celebrated by Museum of Modern Art Curator Wilder Green as "probably the single most consequential buildings constructed in the United States since the [second world] war." Appreciation of the significance of the Richards and Goddard buildings has only grown since the project's completion, as has the significance of Kahn's work more generally, thus qualifying the property under NHL Exception 8. The buildings retain a high degree of integrity in their character-defining design features, and have undergone no major campaigns of renovation or alteration.

### **Describe Present and Historic Physical Appearance.**

#### **Introduction**

The Alfred Newton Richards Medical Research Laboratories and David Goddard Laboratories; hereafter called the Richards and Goddard buildings) consist of two connected laboratory and classroom buildings and their designed landscape setting, located in the southern portion of the University of Pennsylvania's campus in West Philadelphia. Within the University's organizational structure, Richards and Goddard have been treated as two buildings since their creation because Richards was planned through the Medical School and Goddard through the School of Arts and Sciences. They remain facilities for and the respective administrative responsibility of these two schools within the University. Although counted as two buildings, they and their landscape setting were created from a single design project by the architect Louis I. Kahn and associated firms, including landscape architects Ian McHarg and George Patton, structural engineers August Komendant and Keast & Hood, and mechanical engineers Fred Dubin and Conheim & Weger. Richards and Goddard can thus be considered as a single resource. This project began early in 1957 when Kahn was awarded the design and construction was substantially completed by the end of 1963, with landscape work and final documentation finished in 1965. The buildings continue to serve their original program purposes, that is, the Richards Building is occupied by research laboratories (an academic office has taken over one floor in one laboratory tower), while the Goddard Building houses research and teaching laboratories, offices, and classrooms as it was originally designed to do. The buildings are named in honor of two University of Pennsylvania professors and scientists: Alfred Newton Richards (1876-1966) agreed to give his name to the building at the time of its dedication in May 1960. When completed in 1964, the second part of the project was known as the Biology Building, as it had been called through the design process. In 1983 the building was renamed in honor of David Rockwell Goddard (1908-1985), the main force in planning and raising funds for this part of the project. Goddard first came to the University of Pennsylvania as a professor of Botany and he went on to head the division of Biology and to serve as university provost.

Overall, the buildings and associated designed landscape are in fair to good condition, with some wear and tear visible throughout. The vast majority of original spaces and construction materials survive intact, and the buildings and their associated landscape retain a high level of historic integrity in their key, character-defining design features. These constitute the fundamental volumetric organization of the buildings into "servant" and

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“served” areas, the visible presentation of the Vierendeel “truss” (not a true truss because of the lack of a diagonal member) structural system of the “served” volumes along with the visible placement of mechanicals in the open underside of this system, the carefully differentiated treatments of masonry materials, including structural concrete, concrete block, and brick, and the large-light, fixed sash, steel frame windows. With the notable exception of two key spaces at the top of the westernmost tower of the Goddard Building (described below), the interior fittings (laboratory case furniture and classroom equipment) and secondary interior partitions cannot be considered primary features of Kahn’s design. Minor alterations in the form of the additions of utility lines, reconfiguration of some interior spaces, the application of paint to selected, exposed reinforced concrete and concrete masonry units (principally conducted in Goddard to control dust from unsealed surfaces and in some locations in Richards to cover dirt), the installation of such reversible items as window shades, and the replacement of aging laboratory and classroom equipment throughout have not adversely affected the integrity of the key features of Kahn’s original design project.

### **Site and Location**

The Richards and Goddard buildings are located in the southwestern portion of the campus of the University of Pennsylvania, an area of the campus whose western limit is defined by nearby 38<sup>th</sup> Street and University Avenue. The Richards and Goddard buildings sit to the south of Hamilton Walk, a pedestrian way formerly part of Philadelphia’s Pine Street, but which has been closed to vehicle traffic since before the time of construction of the Richards and Goddard buildings. The north and east tower volumes of the Richards Building stand to the north of the Goddard Building. The Goddard Building is thus set back further from Hamilton Walk and is accessed from it by way of a walkway and plaza, while the main entrance to the Richards Building is accessed more directly from Hamilton Walk.

Immediately to the north of Hamilton Walk stand the Quadrangle Dormitories (known as the “Quad”), the complex of Jacobethan Revival buildings in red brick and light stone trim (primarily limestone and cast stone) designed and built by the architectural firm of Cope & Stewardson and their successors beginning in 1894. The Richards and Goddard buildings face the western, Upper Quad portion of the complex. To the west of the Richards and Goddard buildings on Hamilton Walk, and separated from it by a pedestrian walkway, stands the Leidy Laboratory of Biology (originally named the Zoological Laboratory Building), also designed by Cope & Stewardson in the same stylistic and materials idiom as the Quad and dating to 1910-1911. The Cope & Stewardson surroundings are completed by the John Morgan Building, located immediately to the east of, and connected to the eastern tower of the Richards Building. John Morgan was built in 1902-1904 as the main building for the Medical School. In 1928, it was extended to the south by the large Anatomy-Chemistry Wing addition, designed by Cope & Stewardson successors Stewardson & Page.

To the south of the Richards and Goddard buildings lies the James G. Kaskey Memorial Garden (also known as the Bio Pond), first created as the Botanical Garden at the end of the nineteenth century as a research facility for the Botany Department and used as such through and after the time of construction of the Richards and Goddard Buildings. The Garden features a central pond, and includes mature deciduous and evergreen trees, paths, shrubs, and areas planted with flowers to the south of the Goddard Building. The service access to the Richards and Goddard buildings is via a road that skirts the Garden on its eastern side, close to the Anatomy-Chemistry Wing.

### **Designed Landscape Setting**

The area of the design project that produced the Richards and Goddard buildings includes the lawn and brick plaza in front of the buildings to the southern side of Hamilton Walk, ending on the east at the edge of the

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façade of the John Morgan Building and on the west at the paved walkway adjacent to the Leidy Laboratories building and perpendicular to Hamilton Walk. The project also included the entrance steps to the Kaskey Garden just to the south of the Goddard Building, although the berm that separates the buildings from the Kaskey Garden predates the Kahn project. The features of the designed landscape associated with the project consist principally on the north side of the buildings of a set of connected plaza spaces and shallow steps paved in brick that front and lead to the main entrances to each building. The paved areas reflect the axes and rectilinear geometry of the building. On the south side of the building, the associated landscape features constitute the steps and a plaza area on the south side of Goddard. The steps, although essentially unaltered, are in fair to poor condition. The area immediately to the north of the Goddard Building is principally planted as a lawn, and has been since the completion of the Kahn project. A number of specimen trees have been planted subsequent to the completion of construction in various locations around the buildings, and flower beds have been created on the south of the Goddard Building, but these are not associated with the Kahn design, but rather with Biology Department and University administration activities.

### **Organization**

The Richards and Goddard buildings consist of a series of flat-roofed, connected towers, most of which are square in plan, and which vary in height from six to nine stories above grade. The principal exterior materials are exposed reinforced concrete and red brick, which harmonize with the material palette of the Cope & Stewardson Buildings, along with steel frame, fixed-sash windows. The materials and volumes are deployed in ways that correspond to Kahn's embodiment of "servant" and "served" spaces in which there is a functional and physical segregation of primary use and secondary mechanical, circulation, and other services. These buildings were the first generally recognized example of this essential feature of Kahn's design approach (see Section 8).

The Richards Building, the first phase of the project to be built, is sited to the east of the Goddard Building. This "servant" and "served" organization is embodied in the Richards Building in a "pinwheel" plan of a group of three, square-plan primary towers that house laboratory spaces. These primary towers stand to the east, north, and west of a rear, rectangular-plan service tower which holds the principal user circulation for the building and which was originally designed to house laboratory animals. The eastern laboratory tower connects to the south service tower at the latter's northeast corner; the northern laboratory tower connects to the rear tower at the latter's northwest corner; and the western laboratory tower connects on its east to the rear tower toward the middle of the service tower's western side. In addition to the fundamental subdivision of primary towers, the services for the laboratory towers themselves are further broken out and articulated by attached, slender, rectangular-plan, subsidiary towers located at the mid-point of the north and south elevations of the eastern tower, the mid-points of the north, east, north, and west elevations of the north tower, and again at the mid-point on the north and south of the western laboratory tower. These secondary volumes, which rise two stories above the roofline of the laboratory towers, contain either mechanical services, particularly the air flume (exhaust) and piping services for which the building is known, or stair towers for emergency exit. The subsidiary towers containing stairs (on the south elevation of the western and eastern laboratory towers and on the north elevation of the northern tower) are articulated at their top by brick parapet walls that rise on their eastern and western sides, creating a dramatic U-shape, in contrast to the rectangular prismatic shape of the other, mechanical and ventilation towers. The subsidiary, brick towers at the rear (south) of the massive south tower serve for outside air intake. In the original design, the pin-wheeled towers were identified by the letter A for the east tower, which connects to the John Morgan Building; B for the north tower; C for the west tower; and X for the rear, service tower. The University currently uses "A" for the north tower, "B" for the east tower, "C" for the rear tower, and "D" for the western tower.

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In contrast to the organization of the Richards Building plan, whose volumes' pinwheel configuration suggests orbital motion, the Goddard Building's plan is linear, and consists of three towers arranged along the east-west axis paralleling Hamilton Walk and aligned with the western laboratory tower of the Richards Building. The two Goddard Building primary towers immediately to west of the western laboratory tower of the Richards Building (identified as "D" and "E" in Kahn's original scheme) are also square in plan and of the same plan dimensions as the Richards laboratory towers, and thus continue the Richards Building's tower as the essential "served" module for the project. As on the Richards Building's laboratory towers, subsidiary towers provide housing for mechanicals.

The brick-clad, subsidiary towers of the Goddard "served" towers are only located on the south elevations of these towers. On the north elevations of the Goddard Building's two square-plan towers a brick panel is located in the place corresponding to the location of subsidiary towers on the south elevation. The Goddard Building's towers are also more varied in exterior composition and fenestration than the Richards Building. Specifically, in contrast to the vertical repetition of fenestration and cladding pattern in the Richards Building's laboratory towers (reflecting the single overall function for these volumes), the two upper stories of the Goddard towers are articulated by slightly cantilevered, cubic window blocks which reflect and enclose carrel spaces on the inside. Although the carrel forms originally corresponded to Kahn's plan for a two-story library space, which was eliminated from the final design, the cantilevered carrels remain as a reflection of the mixed program of the Goddard Building as both laboratory and classroom facility (and the combination of the two in teaching laboratories). The Goddard "D" and "E" towers are also six stories in height in contrast to the seven stories of the Richards Building's laboratory tower. The Goddard Building's westernmost, third tower (identified as "Y" in the original design), immediately to the west of the D and E towers, is clad in brick, irregular in plan and sparsely fenestrated.

This nine-story (the top story is largely a parapet masking mechanical housing) western Goddard tower is the "servant" counterpart to the rectangular plan, southern tower of the Richards Building. Like it, the Goddard tower rises above its "served" towers in strong, sculptural form. As in the southern tower of the Richards Building, the westernmost tower of the Goddard Building houses the primary circulation of the building (stairs and elevator) as well as restroom facilities.

The irregularity of the "Y" tower's plan reflects the segregation of functions into adjacent rectangular and square plan spaces. On the northeast, a three-sided projection contains the square-plan stair stack. To the west of the stair, another projection houses a restroom stack on floors 2 through 7 above the open entry vestibule at grade. On the east is the connector hyphen linking the end tower to the western served tower. The greatest mass of the tower is on the south, containing the elevator and circulation hallway in most of the floors.

Overall, the dramatic, sculptural composition of the two buildings is most evident in the view from the south from the Kaskey Garden – where the irregular yet balanced rhythm of theme and variation of prismatic concrete and brick solids is most evident.

### **Richards Building Exterior**

As noted, the Richards Building is organized vertically into four principal volumes – three laboratory towers and one main service tower – and each of these principal volumes is in turn served by subsidiary volumes containing specific functions. As also noted, the main exterior materials are reinforced concrete and brick, and the windows consist of large, fixed glass lights in stainless steel frames throughout. The laboratory towers consist of seven floors and basement, with the basement levels also occupied with laboratory spaces.

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Just as the overall volumetric organization of the building reflects its program and function, so does the use of masonry materials reflect a kind of ethos in expressing their structural role throughout the building. Specifically, the load-bearing structure of the building is reinforced concrete – either poured-in-place or pre-cast, pre-stressed (and post-tensioned) Vierendeel beams and their H-plan column supports. This essential structural material is revealed throughout the building; further, the two classes of reinforced concrete are finished so as to reveal their constructional method and, therefore, their slightly distinct structural roles. That is, the pre-fabricated Vierendeel beams and their column supports were given a smooth finish to reflect the industrial, machined-like nature of their production and the assembly-line character of their installation on site as the essential structure for the laboratory towers. Poured-in-place concrete is seen primarily on the interior and at selected floor levels on the rear, service tower. This material was generally finished to reveal the means of its production through the visible traces of the formwork and the location of the ties between forms. It also shows what was for Kahn the fundamental material truth of trabeation: the formwork over openings on the interior was set horizontally to suggest a lintel supported by posts. In contrast, concrete block masonry units visible throughout on the interior and brick cladding on the exterior do not play a key structural role and function as partitions and as decorative material that responds to the campus context, respectively.

The Vierendeel beams and H-plan columns are the most visible portion of the structural system of the building on the exterior, and are seen most prominently in the laboratory towers at floor levels. The vast majority of the reinforced concrete structural elements of the building (which generally house “servant” structures and volumes) are clad in brick veneer on the exterior, with the notable exception of the poured-in-place floors of the service tower, which are most easily seen from the south on the exterior. The concrete-block-filled portions of the walls under the laboratory space windows are also clad in brick on the exterior of the building. The importance of the Vierendeel beam structure of the laboratory towers is announced by its prominence at the Richards Building’s covered entry portico, where it is seen from below, as is the poured-in-place, reinforced concrete floor (and ceiling). The heavier, primary beams are organized throughout the building into a grid of nine equal squares as with a tic-tac-toe game. Lighter, more open secondary beams form an equilateral cross within the squares. This open, covered portico is located at the level of the first floor of the north tower, and accessed by two sets of granite tread steps flanking the fire escape stair tower volume of the north elevation of the north tower. Each set of steps echoes the lines of the tower’s adjacent facades and thus form right angles at the northeast and northwest corners of the laboratory tower. Originally, simple pipe-form rails (which survive) were the only railing for these sets of stairs; a steel rail has been added to each set at the point where the lines of the steps meet at the corners of the building.

The covered entry portico is paved in brick, and is bordered with granite paving blocks, which in turn are surmounted with bollard-like, granite cubes placed at regular intervals. The rear (south) of the portico slopes off for drainage on either side of the main doorway to the building. The cheek walls of the raised portico are clad in brick. Select open areas near the corners in the open truss system in the ceiling over the portico (where pipes are located in the upper parts of the building) are also decoratively infilled with brick. The main entry itself, located in the north wall of the rear, service tower, consists of two sets of glass and bronze doors with a side-lit, shallow foyer between the two sets of doors.

Windows are located in three areas on the exterior of the Richards Building, and, as noted, all share fixed, stainless steel frames. First and most prominent are the large, rectangular sash installed above the brick and concrete-block panel in the laboratory spaces. These single-light windows reflect Kahn’s original, idealistic design intention of shared, open, studio-like space for collaborative laboratory research benefited by abundant

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natural light. This vision was, however, only partially realized, since the original academic occupants found this configuration difficult for both research and academic use. Thus, by the time Kahn's firm had produced construction documents for the building, most of the open "studios" had been subdivided to accommodate offices spaces for faculty members and smaller laboratories to keep research projects better segregated (and thus more confidential) from each other. Further, as can be seen on the exterior of the building, various shades, foils, and curtains that have been installed in multiple locations, because uncontrolled natural light proved a problematic environment in which to work. The light screen product Kahn hoped to employ on the Richards Building was eliminated from this part of the project for cost-cutting reasons (called Koolshade, it was eventually used on the Goddard Building, see upper floor).

The frames for these large-scale lights meet at the outside corners of the towers. A small flashing detail projects at the top of the sash. Above these large lights, two smaller, fixed-sash windows are located on the lower side of the main Vierendeel beams. The original configuration of the larger of these was that two, glass panels met and were clipped together at the corner of the building, although a small percentage have been replaced and a window frame introduced at the corners. In the original configuration, the windows with southern exposure, and most upper windows with western exposure were translucent and blue-tinted to help in modifying light infiltration.

The fenestration for the Richards Building also lights its interior circulation spaces. Specifically, the lobby spaces on the northern side of the rear service tower are lit on the north elevation near its eastern end by a floor-to-ceiling, fixed sash, and by a corresponding fixed sash on the western elevation near the northern end. The full-height, narrow, corridor hyphens between the towers are also lit with narrow, full-height sash.

### **Goddard Building Exterior**

As with the Richards Building, the main entry to the Goddard Building is gained through an open portico formed by the open first floor of a served tower (here the eastern laboratory and classroom tower). This portico, just slightly above grade on the north side, is also open on the south, providing entry to the Kaskey Garden via a set of brick stairs in two flights with a small plaza between flights. The main material vocabulary of the Richards entry is echoed in Goddard in brick paving and granite trim. Here, the H-column supports and concrete structural system and poured-in-place concrete floor are also visible from below, although in Goddard the secondary Vierendeel beams used in the Richards Building were eliminated from the design. Because the Goddard Building entry space is not as enclosed by the subsidiary towers as in Richards, the H-columns appear more as a colonnade. The eastern entry to the building is located on the western side of the portico, and consists of a set of double glass doors in steel frames surmounted by a transom.

The other entry for the building is located at the base of the western service tower, and is accessed by an open vestibule on its north side whose doorways echo the openings at the base of the subsidiary stair towers of Richards. Again, the doors themselves are glass in metal (here steel rather than bronze) frame with a transom above.

The locations and finish of masonry materials (brick and reinforced concrete) of the Goddard Building essentially repeat those of the exterior of the Richards Building, with the concrete structure visible on the surface at the floor (and ceiling) levels of the served towers and brick veneer panels in other locations. Also as for Richards, the reinforced concrete service towers are clad in brick veneer.

As noted, the fenestration of the Goddard Building is more varied than that of Richards but also consists of

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large, fixed lights in stainless steel frames. Overall, the fixed horizontal sash on the four lower floors of the served towers is proportionally smaller than the corresponding sash in Richards (and thus the brick panels below them are proportionally larger), but it is complemented by fixed vertical sash flanking the H-columns. On the first floor of the western served tower, containing classroom spaces (the first floor of the eastern served tower is the open portico), the horizontal sash is reduced to provide greater wall space on the interior. As also noted, the projecting, blocky, paired carrel forms mark the two upper stories of the served towers. The carrels have fixed sash windows in the "T" form which would become a familiar visual trope in Kahn's work. Here, both the upper and lower sash are almost square and are articulated by projecting, stainless steel sills. The carrel blocks themselves are topped by metal flashing over concrete lintel panels and have glazed brick sills. Thin, horizontal sash placed immediately above the carrels meet at the corners of the towers in a similar manner to the upper strip windows on the laboratory towers of Richards. Light-filtering, metal screen shades dating to the original construction survive in many locations on the building. As in Richards, the circulation hyphen between towers in the Goddard Building is lit by full-height, fixed sash.

The fenestration of the nine-story, brick-clad western tower varies between the lower floors and the upper, and, as elsewhere in the buildings, this reflects a shift in interior program. All of the corners of the "Y" tower are lit on the lower six floors by a thin, vertical strip window of lapped sheets of glass set into a narrow return in the masonry, except on the southeast, and on the first floor of the northwest corner of the building, where the western entry is located. Kahn would repeat and develop this corner motif -- a dramatic variation on the modernist trope of the dissolve of the building's corners by the "removal" of the corner post -- in subsequent projects, including the Library of Phillips Exeter Academy (1965-1972), and the Indian Institute of Management in Ahmedabad, India (1962-1968; 1969-1974). At the level of the seventh and eighth floors of the "Y" tower, the strip appears to broaden at the northwest and southwest corner, where diagonally placed, vertical, floor-to-ceiling windows light the seventh floor faculty lounge and eighth floor office. This office is also lit by fixed, square sash windows in the eastern and western walls of the wing. The corner, vertical slash motif is continued into the ninth-floor parapet; there is no glazing in the opening at this level. As in the Richards Building, the elevator lobby circulation space is lit on two sides by floor-to-ceiling windows, here on the north immediately to the east of the northern restroom volume and on the south immediately to the east of the elevator block.

Overall, the exterior of both the Richards and Goddard buildings is in fair to good condition, with some minor soiling and spot deterioration of the exposed concrete in some locations. The buildings maintain a high degree of historic integrity, having undergone no major alterations, and retaining almost all of the original window sash throughout, as well as virtually all of the original exterior masonry. Further, such details as the window shade mesh survive in a number of locations on the Goddard Building, as well as the entry doors in both buildings.

### **Richards Building Interior**

Each of the laboratory tower floors in the building is identical in its underlying design scheme. That is: each is fundamentally a 45' square unit, with a poured-in-place, reinforced concrete floor/ceiling that was installed on top of the Vierendeel beam system. As noted, Kahn's original idealistic vision for all the laboratory tower floors was for flexible and open, single span spaces in which the scientists would work in studios with abundant natural light in the manner of architects' studios. Further, Kahn intended that within these laboratories, ducts, wires, pipes, and other mechanical systems necessary to serve and vent the laboratories would be contained within the open beam ceiling, and that the openness of this system would allow for both variation in individual configuration and later additions. As also noted, the initial vision for completely open labs did not survive Kahn's schematic design. Instead, interior concrete block partitions were added to the design to create smaller

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laboratory spaces, faculty and administrative staff offices, and interior corridors. In some locations, the partitions were run up vertically to the point of closing in the open beam system in order to provide more privacy for office occupants. In a small number of locations, partitions have been added or changed since construction.

While some configurations of interior block partitions within the laboratory spaces are repeated within the building, the arrangement of these divisions is not necessarily consistent either from one floor to the next or between towers on a given level. Some laboratories were built as and have remained relatively open; more often, a relatively open laboratory space was created adjacent to the exterior windows. The vast majority of the originally installed partitions remain in situ, and new partitions have been introduced in some spaces as specific use for individual occupants or program varied since completion. While the majority of the concrete block partitions within the laboratory spaces date to the original construction, their configuration and installation occupies a secondary position as a character-defining feature of Kahn's design project (Kahn himself considered them as impermanent and expendable).

The open areas of the Vierendeel beam system and the flume subsidiary towers still remain the primary locations for mechanicals, and the original, suspended, strip fluorescent and cylindrical, white-finish "can" light fixtures survive in many locations throughout the buildings. In order to accommodate the increase of load standards for many mechanical systems, as well as the introduction of new systems, mechanicals have been installed in some additional locations, such as hallways, although this has been kept to a minimum. Suspended ceiling panels have also been introduced in some locations. Overall, however, Kahn's essential system of organization and placement of mechanicals survives intact.

As is to be expected, some of the laboratory benches, case pieces, and laboratory equipment in the laboratory tower spaces have been replaced, rearranged, or removed in order to meet ongoing research needs and evolving life safety standards. While Kahn's office did have a role in designing some of this furniture, particularly some larger case pieces (and these do survive in a number of locations), they have, again, a secondary, if not marginal, role as character-defining features of the design since such equipment is invariably and necessarily renewed for life safety and practical research purposes in comparison to the fundamental volumetric organization of the buildings, and the treatment of masonry materials within them. Finally, future changes of this sort were part of Kahn's original vision for the building.

The finishes and materials of the primary circulation spaces in the building retain a high degree of historic integrity as a whole. As noted, one of the key aspects of the original design was the exposed, poured-in-place, reinforced concrete within the building. A key feature of this concrete is the patterns of the carefully selected plank formwork plainly visible in numerous locations: this treatment of reinforced concrete is a hallmark of the Kahn's design in many projects, and first became a recognized feature of his work with the Yale University Art Gallery (1952-1953). This survives throughout the building, although it shows signs of wear and soil to be expected given the program use of the building; a small number of surfaces in circulation areas have been painted in an attempt to deal with the soiling. Equally, the original terrazzo floors survive in the vast majority of locations, as do a number of original doors with associated hardware. The elevator doors and call button panels were replaced in a University-wide project within the last decade.

The finishes and materials of the main circulation stair of the service tower also survive intact, including the poured-in-place concrete stairs themselves and travertine treads, as well as the oval section wood hand rail and steel baluster. Another material common throughout the building is thin sheets of black slate used primarily for

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window sills. These survive in virtually all locations.

### **Goddard Building Interior**

As in the Richards Building, the interior of Goddard Building has undergone no major alterations or additions, although the building has seen small renovations in many locations for functioning laboratory and classroom purposes. In contrast to the commonalities of organization of interior spaces in Richards, Goddard has more variation of interior plan, reflecting the building's larger number of original program functions. These functions are: lecture classrooms, research laboratories, teaching laboratories, academic department offices, faculty lounge, and faculty offices. Most of the floors of the "D" and "E" served towers are organized in a double-loaded, central corridor plan with the corridors formed by concrete block partitions running east-west connecting the two towers to each other, the "Y" tower to the west, and leading into the Richards Building.

The basement level of the "E" (middle) tower contains mechanicals and laboratory spaces. Restrooms are located at this level in the "Y" tower. There is no basement level in the "D" tower; the first floor level of this tower is the open entry portico. The first floor of the "E" and "Y" towers are occupied by classrooms and the building's west entry lobby, respectively. The first floor of the "E" tower is occupied by classroom spaces. The northern portion of the floor, originally a single, long, narrow classroom, has been subdivided and renovated. The southern portion of the plan is divided into two classrooms.

The second through sixth floors of the "Y" tower contain restrooms at the western end of the building, the elevator on the south, and the stair tower on the north. The second through sixth floors of the "D" and "E" towers consist of either teaching or research laboratories, with the exception of the second floor of the "E" tower which houses the Biology Department offices, as it has since the completion of the building. These rooms include the chairman's office – at the time of the completion of the design of the building, this was David R. Goddard, who worked closely with Kahn and his office on the building.

Generally, the teaching and research laboratories occupy either the northern or southern half of the respective towers; the teaching laboratories have a fairly open plan within those spaces. While the configuration of the research laboratories in the Goddard Building varies from one to the next, the division of spaces is more orderly than the laboratory floors in the Richards Building: the arrangement of the subdivision of floors or half-floors is usually symmetrical with respect to either the north-south or east-west axis. As in Richards, new partitions have been introduced in some locations owing to change of specific use or occupant.

As in Richards, concrete block interior partitions are found throughout the building and were most often constructed to a height below the underside of the beams in order to allow for the passage of air and other mechanicals through the beams in teaching and research laboratory spaces. Also as in Richards, the open areas above the partitions and in some location in the beams themselves have been filled in to reduce sound travel and security. Above the corridor partitions on floors that contain laboratories, the open areas have been filled in in a somewhat ad hoc manner for greater security with wire mesh, grilles, or other similar materials in order to continue to permit air flow but to prevent the thefts that became a problem in the building soon after construction. In most locations in the building, the concrete block has been painted. This was necessitated by the dust generated by improperly sealed or sub-standard material; because Kahn's office was not the construction manager for Goddard (see Section 8), he had less control over materials finishing than he did in Richards. The dust generated by the concrete block proved inimical to microscope work and had to be remedied by sealing early in the building's life.

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The palette of other interior materials and finishes in Goddard is also similar to that of Richards. As in Richards, the original lighting fixtures throughout were fairly simple, consisting of suspended strip fluorescent fixtures, white-finish "can" downlights, and milk-glass globes in the stairwells. Many of these have been replaced. Exposed, poured-in-place reinforced concrete again also plays a significant role, and in Goddard appears as the exposed finish floor material in some locations (a cost-saving measure over the terrazzo of Richards), although linoleum tile and similar, finish sheet goods have also been applied to a number of floors and areas, and some have been carpeted. Further, because Kahn's office did not have construction supervision on the Goddard portion of the project and severe cost-cutting was necessary in the final design, the wood formwork was not as rigorously controlled, the concrete work was not as carefully finished, and plywood was used instead of individual boards. Because of the dust problem with the concrete block, all exposed interior concrete masonry surfaces were sealed with an unidentified, clear sealant early in the building's life. The exposed concrete has also been painted in some locations in Goddard because of wear, but is visible in most circulation spaces, including the "Y" tower stair, as in Richards.

In the Goddard Building portion of the project, Kahn introduced a new interior masonry material which was not used in the Richards Building: exposed brick. This can be found as the finish material in the restrooms in the "Y" tower, and as the finish material of the upper floor carrels, along with black slate used as trim and as the window sills as in Richards.

The furniture and laboratory equipment has been renewed or replaced in a number of locations in Goddard as in Richards, although some case pieces do survive. With the exception of the faculty lounge and office spaces at the top of the "Y" tower, the furniture and related fittings in the Goddard building also have a secondary, if not marginal role relative to Kahn's design, just as they do in the Richards Building.

The fittings and finishes of the seventh-floor faculty lounge, and particularly those of the eighth floor office in the "Y" tower, are a variation on the utilitarian, tough materials of exposed reinforced concrete, brick, and concrete block of the rest of the building and reflect the different program for these spaces in contrast to the rest of the building. In the seventh-floor faculty lounge, exposed brick is augmented by a wooden ceiling grid and original cork board; the restroom for this space (in the southwest corner) continues the materials of the restrooms below of reinforced, pour-in-place concrete and exposed brick, it also features a larger window at the corner of the building (noted above), with milk glass panels added on the inside for privacy, and a shower with black slate trim. The shower retains its milk glass globe fixture. The eighth floor office is lined in the light-finish oak panel woodwork which would become one of the recognized signatures of Kahn's later work: the paneling itself consists of two equal-sized courses or levels, and, while essentially flush in profile, the paneling is built in the traditional cabinetry configuration of field and frame with stiles and rails and a horizontal rail between the two levels. The panels alternate with bookshelves in the same finish. The ceiling, as in the lounge below, is articulated by a natural finish, wooden grid; here, the boards are much more closely spaced and of higher quality lumber. The flooring also consists of wood in the same finish: rows of relatively short boards. The square, western window is fronted on the interior by moveable, interior shutters with slate blackboards which can be completely slid into pockets in the wall. The restroom for this office is finished with small, square ceramic tiles (blue on the walls, white on the floors) and a plaster ceiling. Water damage from infiltration around the windows and from above is evident in a number of locations in this office: the flooring is buckling and stained in several locations, the plaster ceiling in the bathroom is damaged, and the finish has been damaged on several window sills. Nonetheless, this space and its finishes survive with a high degree of historic integrity and must be considered in a separate category from the finishes in the laboratory and classrooms in terms of their role as character-defining features of Kahn's design.

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### 8. STATEMENT OF SIGNIFICANCE

Certifying official has considered the significance of this property in relation to other properties:

Nationally: X Statewide:    Locally:   

Applicable National  
Register Criteria:

A    B    C X D   

Criteria Considerations  
(Exceptions):

A    B    C    D    E    F    G X

NHL Criteria:

4

NHL Criteria Exception:

8

NHL Theme(s):

III. Expressing Cultural Values

5. Architecture, landscape architecture and urban design

Areas of Significance:

Architecture

Period(s) of Significance:

1957-1965

Significant Dates:

Significant Person(s):

N/A

Cultural Affiliation:

N/A

Architect/Builder:

Kahn, Louis Isadore (1901-1974)

Historic Contexts:

XVI. Architecture

Z. Modern

Draft Theme Study: Essays on Modern Architecture

4. The Modern College Campus and  
Modern Buildings on Campus

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### **State Significance of Property, and Justify Criteria, Criteria Considerations, and Areas and Periods of Significance Noted Above.**

#### **Introduction**

The Alfred Newton Richards Medical Research Laboratories and David Goddard Laboratories (1957-1965; the latter named Biology Building before 1983) are nationally significant as one of the most important works of mid-twentieth-century American modernism and of Louis Isadore Kahn (1901-1974), the internationally influential architect. The importance of the Richards and Goddard buildings project was recognized nearly universally by the American architectural community from almost the moment of the inception of its design in 1957, and was the project that first brought Kahn to broad recognition by the American (and international) public. While the completion in 1965 of the Goddard Building, the second phase, makes the project as a whole less than fifty years of age, the recognition of its national (and international) significance that came before it was even finished has only grown since that completion. Thus, the buildings qualify under NHL exception 8 as “achieving national significance within the past 50 years.”

Several fundamental concepts that have led to Kahn’s recognition as exceptionally significant in the history of American architecture found both their first full expression and their first public recognition with the Richards and Goddard buildings project. Although Kahn never intended these buildings as a protest, contemporary observers immediately understood them to be a profound statement of American architectural style that provided a potent design alternative to International Modernism, chiefly as it was embodied in the work of Mies van der Rohe (and in particular as it was epitomized by his Seagram Building in New York City completed in 1958). In this vein, critics at the time placed Kahn, through this project, in the ranks of such great American architects as Frank Lloyd Wright and Louis Sullivan. Several key design ideas embodied in these buildings led to this recognition. First is the organization of architectural form into “servant” and “served” spaces and the clear expression of this organization on the exterior of a building, in contrast to the undifferentiated “universal” interior space and prismatic glass boxes of International Modernism. Second was Kahn’s visual emphasis (through the use of exterior masonry materials) on the expression of load and structure throughout the buildings, which, in turn, countered the seeming weightlessness of the glass curtain wall and structural steel. The final influential aspect of Kahn’s approach first clearly seen in this project was the positive, conscious response to historic architectural form and materials. The philosophy underlying Kahn’s approach to the buildings can be captured in some of the architect’s aphorisms that have come to be almost as familiar as Mies van der Rohe’s “less is more” and Frank Lloyd Wright’s “organic architecture.” In the Richards and Goddard buildings, Kahn was first recognized broadly for creating “what the building wants to be” and for his aspiration that architecture should be “the thoughtful making of spaces.” The humanistic values inherent in this approach and Kahn’s rigorous approach to and treatment of materials in this project have endured as key aspects of the understanding of its significance, and of this architect’s work in general.

#### **Kahn Biography**

Louis I. Kahn was born Leiser-Itze Schmuilowsky in Pärnu, Estonia, the son of Beila-Rebecka Mendelowitsch and Leib Schmuilowsky. For unclear reasons, Kahn mistakenly recalled his birthplace as the island of Ösel (now called Saaremaa), perhaps because the young family lived there for a time in the town of Kuressaare (then called Kingisepp). Kahn’s father arrived in Philadelphia in 1904, followed by the rest of the young family in 1906. “Schmuilowsky” was exchanged for “Kahn” in 1912.<sup>1</sup>

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<sup>1</sup> Kahn’s birth name and place have been discovered and published only since 2006. See Carter Wiseman, *Louis I. Kahn: Beyond Time and Space* (New York and London: W. W. Norton, 2007), 12-13.

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Like a number of his contemporaries, Kahn first studied architecture at Philadelphia's Central High School, and went on to the architecture program at the University of Pennsylvania, where he earned a B. Arch. in 1924, studying under the eminent architect and educator, Paul Philippe Cret. While still a student, Kahn was employed in offices in the city as a draftsman during the summer. After completing his architecture degree, Kahn entered the office of City Architect John Molitor as a senior draftsman working on the design of the 1926 Sesquicentennial buildings. Kahn left Molitor's office not long after the completion of the exposition buildings, joining the practice of theater designer William H. Lee in 1927. In 1928, Kahn left for Europe to see the architecture he had studied from afar and to hone his skills as a renderer.

Kahn returned to Philadelphia in 1929, and found work in Cret's office as a designer, participating in the Folger Shakespeare Library project in Washington, D. C., among others. Thinking himself gainfully employed, Kahn married Esther Israeli in 1930, but unfortunately, Cret did not have enough work in his office to retain Kahn. Cret did, however, help him to find a position as a designer with the firm of Zantzinger, Borie & Medary at the end of that year. Kahn remained in that office until early 1932, participating in the U. S. Department of Justice Building project, also in Washington.

In early 1932, Kahn and Dominique Berninger formed an important incubator for modern design in Philadelphia, the Architectural Research Group. The members of this loose association of progressive-minded young architects were interested in both the populist social preoccupations and new style details of contemporary European designers. Among their projects were unbuilt schemes for public housing presented to the Public Works Administration. One of the other ARG members may have been Solis Kopelman, with whom Kahn formed what was probably his first true partnership by 1933.

While the ARG dissolved at the end of 1933, progressive "group housing" would remain at the core of Kahn's work into the 1950s. These projects were accomplished in association with a number of other Philadelphia architects, including important the early modernist, Kenneth M. Day. After the dissolution of the ARG, Kahn found work with the Philadelphia City Planning Commission as a squad head working on housing studies; he then was employed in the federal government's Resettlement Administration, and was a consultant to the Philadelphia Housing Authority.

Among the most important of Kahn's alliances was with the Philadelphia architect, and important early modernist architect and educator George Howe. Kahn probably first worked directly with Howe in connection with projects for the Philadelphia Housing Authority in the late 1930s; in 1940 Howe invited Kahn to form a partnership to pursue projects. Howe remained a key figure in Kahn's career until his death, although this association was short-lived. Kahn's 1940s working partnership with modernist Oskar Stonorov survived longer. In 1945, Kahn began his working collaboration and personal relationship with Anne G. Tyng, with whom he would design several projects.

Kahn's influential teaching career began with an appointment at Yale in 1947. In 1950, he was named architect-in-residence at the American Academy in Rome, and spent a pivotal nine months traveling in Europe, gleaning essential lessons about monumentality, light, and form from ancient buildings and sites. Upon his return, he received a crucial commission for the Yale University Art Gallery, in part through the influence of Howe, who had become Chair of the Architectural Department in 1950. In 1955, Kahn returned to the University of Pennsylvania as a teacher, and was named the Paul Cret Professor of Architecture in 1966. At Penn, Kahn became more than an influential teacher: he was something like a philosopher in residence, a

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charismatic thinker who inculcated the core elements of his mature work – a reverence for materials, light, and humanistic values, and an almost religious belief in elemental, Platonic geometric solids.

After the completion of the Richards and Goddard buildings project, which brought the architect to international attention, the 1960s saw Kahn's practice expand dramatically, with projects in the United States and abroad. Kahn, who first joined the national AIA in 1935, was made a fellow of the Institute in 1951, and was the recipient of numerous other awards and honors. Among these, he was named a fellow of the World Academy of Arts and Sciences in 1962, and made a member of the National Institute of Arts and Letters in 1964, having been awarded the Arnold W. Brunner Memorial Prize in 1960. In 1973, this organization awarded Kahn its Gold Medal for Architecture. He was made a member of the American Academy of Arts and Science in 1968, and named a fellow of the Royal Society of Arts in London in 1970; the Royal Institute of British Arts awarded him a Gold Medal in 1972. In addition to his teaching at Yale and Penn, Kahn was the Albert F. Bemis Professor of Architecture and Planning at M.I.T. in 1962, and the Class of 1913 Visiting Lecturer at Princeton University from 1961 to 1967. Many educational institutions bestowed honorary degrees upon him as well, including the University of North Carolina, Bard College, the Maryland Institute College of Art, Yale University, and Columbia University (posthumously).<sup>2</sup>

### Significance

The Richards and Goddard Buildings project marks the first full expression of several core ideas for which Kahn has become recognized as significant in the history of modern architecture, if not architecture more generally considered. The first of these is the organization of buildings into “servant” and “served” spaces and the clear articulation of this organization on the exterior of the building; second is the reintroduction of “the antique notion of mass with structure openly depicted as bearing weight.”<sup>3</sup> In the case of the Richards and Goddard Buildings, this reintroduction was expressed in the prominence and finish treatment of the structural, reinforced concrete throughout the buildings, as well as the use of brick as a response to the historic context of the University of Pennsylvania campus. These key design ideas were almost instantly recognized for their significance by scholarly, critical, and popular audiences as extremely important design statements that countered the philosophy of International Modernism of undifferentiated, universal space and volume and of the minimization of the appearance of weight and load through such constructional devices as the glass curtain wall and the predominance of structural steel. More important, Kahn's design ideas were not merely recognized, but embraced. As David G. De Long writes, Kahn had a normative effect on Modernism: “he rethought it by dealing with its parts, and in so doing came ultimately to change it as a whole.”<sup>4</sup>

In fact, the first published discussion of the buildings and an important recognition of Kahn's influential role in modern architecture came while the project was still in the formative stages of design. In an article published in the fall of 1957, Walter McQuade discussed Kahn's approach and the project then “on the boards.” McQuade, declared that “if Kahn is a revolutionary, he is a positive one,” and, ending with a reference to the modernist dictum, noted that “his basic credo is a very strange one in the face of the current monolithic belief in *form*

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<sup>2</sup> Biographical information is based on Emily T. Cooperman, “Kahn, Louis Isadore (1901-1974),” Philadelphia Architects and Buildings website, [http://www.philadelphiabuildings.org/pab/app/ar\\_display.cfm/21829](http://www.philadelphiabuildings.org/pab/app/ar_display.cfm/21829). See also David B. Brownlee and David G. De Long, *Louis I. Kahn: In the Realm of Architecture* (New York: Rizzoli, 1991) and Wiseman, *Louis I. Kahn: Beyond Time and Style*. Michael J. Lewis's essay on Kahn's early career included in Eugene J. Johnson and Lewis's *Drawn from the Source: The Travel Sketches of Louis I. Kahn* (Cambridge, MA: MIT Press, 1996) analyzes Kahn's early career insightfully and in detail.

<sup>3</sup> De Long, in Brownlee and De Long, *Louis I. Kahn: In the Realm of Architecture*, 51.

<sup>4</sup> David G. De Long, “The Mind Opens to Realizations,” in Brownlee and De Long, *Louis I. Kahn: In the Realm of Architecture*, 51.

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*follows function.*” McQuade went on to quote Kahn's discussion of the underlying philosophy that informed his design approach as the Richards and Goddard buildings project took shape: " 'Space evokes its use. Merely to put a package of walls and roof around a process, whether it is a manufacturing plant or a family's life, is not doing anything for it. That isn't efficiency. A building should add something to the process it harbors, and make it better, *more efficient, more rewarding.* '"<sup>5</sup>

As the project moved forward, recognition grew. An article published for a popular audience in the *Philadelphia Inquirer* in 1959 reported variations on Kahn's now-famous dictums that "an artist-architect tries to capture *what a thing wants to be* [emphasis added]" and that the core tenet of his work that architecture should be "the thoughtful making of spaces," in direct connection with an illustrated discussion of the project and the architect's aesthetic philosophy. The article also explicitly contrasted Kahn's work with that of the International Modernists, noting that the buildings' "massive, raw-boned structure on University Avenue. . .will suit the architecture of the campus in a way that no shimmering tube of glass and steel could."

Soon after construction on the Richards Building had begun late in 1958, publications appeared that celebrated the project's technical innovations, particularly the pre-fabricated, reinforced-concrete Vierendeel beam system that was at the core of the Richards (and later Goddard) "served" towers. In the fall of 1959, the *Architectural Record* lauded the "Logic and Art in Precast Concrete" of the design and recorded that Kahn's "comment on the precast shapes shown on these pages [diagrams and details of the beams in assembly were illustrated] is that they convey the spirit of the building."<sup>6</sup> In "Art Serves Science," which appeared in August 1960, "the structural system" was characterized as:

first and foremost an efficient support for the building itself and a thruway for its mechanical loads. It is also one of the few truly logical, and hence truly artful, uses of prestressed pre-cast concrete to date. . . . Its brawny sculpture fully exploits both the tractable strength of concrete and the sleek finish and intricate detailing made possible by factory forming.<sup>7</sup>

"A Theory for the Future" (January 1960) emphasized the fundamental efficiencies in accommodating future mechanical expansion provided by the design's volumetric organization. This article heralded a bright future of flexible use changes wherein "all sorts of remodeling will be possible in the 'space for the people' without the need for any important disruption of mechanical service."<sup>8</sup>

Equally early, architectural historians Vincent Scully and Henry-Russell Hitchcock favorably placed Kahn, on the one hand, in the ranks of then more famous architects, and this project, on the other, in the mainstream of important trends in American architecture. In his 1960 "Notes of a Traveller," Hitchcock placed Kahn's work in notable architectural company. He remarked that before that point, Kahn had been "an architect's architect," but that:

if [Frank Lloyd] Wright's career has ended [with his death in 1959], another American architect's career now displays a rising curve. Amid the welter of eclectic uncertainty that has followed so closely upon the triumph of the Miesian, one architect [Kahn] stands out by his total integrity [and] his scorn of fashion. One may conclude by remarking that in all the confusion that has followed the mid-century in

<sup>5</sup> McQuade, "Architect Louis Kahn and his Strongboned Structures," *Architectural Forum* 107 (Oct. 1957): 138-139.

<sup>6</sup> Anon., "Logic and Art in Precast Concrete," *Architectural Record* 126 (September 1959): 233.

<sup>7</sup> Anon., "Art Serves Science," *Architectural Record* 128 (August 1960): 151.

<sup>8</sup> Anon., "A Theory for the Future," *Architectural Forum* 112 (January 1960): 13.

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architecture, Kahn's direction is the least ambiguous and the most solidity [*sic*] founded on the sixty-year traditions of international modern architecture.<sup>9</sup>

Scully, in one of the grand synthetic historical analyses for which he is known, located Kahn in the continuum of an important American design tradition which he named the "Precisionist Strain." Scully characterizes this as "purity of shape, linearity of detail, and at times, compulsive repetition of elements" and identifies "four related kinds of precisionism" that "may be distinguished: of surface, of mass, of plan, and of structure. After charting the course of this phenomenon from the seventeenth-century Parson Capen House in Massachusetts through Thomas Jefferson's University of Virginia and the architectural holy trinity of H. H. Richardson, Louis Sullivan, and Frank Lloyd Wright, Scully concludes his article with Kahn and the Richards Building, asserting that "already a more profound harnessing of our precisionist instinct apparently occurred in Louis I. Kahn's Medical Laboratories just completed for the University of Pennsylvania," thus placing Kahn in the ranks of these famous architectural forebears.<sup>10</sup>

Full-length, critical essays on the project also started appearing in 1960, after the Richards Building construction had reached a stage where the character of the project was evident on site (these almost invariably only addressed Richards, since construction on Goddard started over a year after Richards was dedicated in May 1960). Architect James Marston Fitch weighed in on the importance of the design and the designer that year, calling his article "A Building of Rugged Fundamentals." He asserted that "the new building which Louis Kahn is just now completing for the University of Pennsylvania is an act of authentic, almost startling originality." Fitch neatly encapsulated a measure of the complexity of the design, saying that it "is not an easy building to analyze because its visual impact is almost wholly the result of important decisions in plan and structure, not in any surface enrichment or detachable device," and eloquently described the organization by saying that "the served and servant areas are grouped together in a sort of community of form." Fitch was also probably the first to note in print a key feature of Kahn's approach: his positive relationship to historic form and materials, another enormously influential aspect of the architect's work. Fitch raises the topic by noting a visual similarity that has been frequently remarked in connection with the project (and which Kahn openly acknowledged): "the massed towers of this building are bound to remind the more literate observer of the towers of San Gimignano and Bologna." Fitch goes on to draw a clear distinction between Kahn's positive response to historic form and "applied historicism." He also highlights Kahn's "sense of historical perspective."<sup>11</sup> This "historical perspective," as well as his open, positive response to the immediate historic architectural context in which the project was situated (primarily through Kahn's echo of the red brick and light-colored palette for the stone trim of Cope & Stewardson's surrounding buildings), were two key aspects of Kahn's work that set it apart from the dominant, mid-century International Modernist idiom. While clearly distinct from the approach of later Post-Modernism, this embracing of history was one of the facts of Kahn's architecture that was enormously influential.

Fitch's thoughtful essay was followed by one authored by architectural historian William H. Jordy. In a 1961 essay in *Architectural Review* that would be later be reprinted as the concluding chapter in Jordy's *American Buildings and their Architects 5: The Impact of European Modernism in the Mid-Twentieth Century*, the author's opening salvo was that this was a "real building."<sup>12</sup> He expanded on Scully and Hitchcock's slightly

<sup>9</sup> Henry-Russell Hitchcock, "Notes of a Traveller: Wright and Kahn," *Zodiac* 6 (1960): 20, 21.

<sup>10</sup> Vincent Scully, "The Precisionist Strain in American Architecture," *Art in America* 48 (1960): 46-53.

<sup>11</sup> James Marston Fitch, "A Building of Rugged Fundamentals," *Architectural Forum* 113 (Jul. 1960): 83, 185.

<sup>12</sup> The essay included in the later publication, "What the Building Wants to Be: Louis I. Kahn's Richards Medical Research Building at the University of Pennsylvania" *American Buildings and their Architects 5: The Impact of European Modernism in the*

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earlier writings, situating Kahn, through this design, in the ranks of the most important modern architects. Focusing first on Le Corbusier, Jordy stated that “if Le Corbusier comes immediately to mind in first experiencing Kahn’s building, it is not only because its sculptural complexity stems from a comparable concern to break up the institutional lump into human-sized compartments.” Jordy went on to invoke Wright (as had Hitchcock), and then the master International Modernism in America, Mies van der Rohe. Jordy asserted that:

more than any other building to date, Kahn’s represents the stage beyond Mies. . . . Kahn . . . extends the ideal structure of Mies by giving it concreteness and tangibility in two respects. First, the structure embodies the spaces defined by the activities and services housed by the building. Second, it is more insistent on its own physical reality.

Jordy concluded this comparison by indirectly invoking the Miesian mantra of “less is more,” remarking that “after all, [Kahn’s] architecture is not ‘almost nothing.’ It is ‘what it wants to be.’”<sup>13</sup>

The dedication of the Richards Building in the spring of 1960 sparked more popular attention, including an article in *Time*, which pronounced Kahn to be a “poet-visionar[y]” as well as a “builder” like Frank Lloyd Wright.<sup>14</sup> *Progressive Architecture* announced that “what may well prove to be one of the most significant buildings of the 20<sup>th</sup> Century has been dedicated at the University of Pennsylvania.”<sup>15</sup> Kahn’s reputation, and the place of the Richards and Goddard project in it, was sufficiently well established by late 1960 for the project to be included in the *Britannica Book of the Year* as “virtually a text piece for younger architects.”<sup>16</sup> In early 1961, the popular magazine *Pageant* identified Kahn as one of the “Ten Americans to Watch” that year, and included fellow architect Paul Rudolph’s assessment: “‘The Richards Medical Research Building which has just been completed by Louis Kahn for the University of Pennsylvania is the most significant building of the decade.’” The publication also noted that the project was “considered by others than Rudolph to be a masterpiece,” and quoted modernist Philip Johnson, who predicted that “‘it will be world famous’” and that “‘the times are getting ready for Kahn’s work.’”<sup>17</sup>

The summer of 1961 brought a rare honor. A single-building exhibition devoted to the Richards and Goddard buildings project opened at the Museum of Modern Art in New York (while the Richards Building was featured in print discussions because it was near completion at that point, the design project as a whole was shown in drawings and models). The hyperbole that had been growing about Kahn and his design reached a crescendo in connection with this exhibition. The curator Wilder Green, a former Kahn student, pronounced it “probably the single most consequential building constructed in the United States since the [second world] war.”<sup>18</sup> *New York*

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*Mid-Twentieth Century* (New York: Oxford University Press, 1972): 361-426, was expanded from the original version.

<sup>13</sup> William H. Jordy, “Medical Research Building for Pennsylvania University, Philadelphia,” *Architectural Review* 129 (Feb. 1961): 99, 100. In the period during which the Richards and Goddard buildings project was being designed, Kahn himself publicly addressed Mies van der Rohe and one of his best-known works, the Seagram Building in New York City, on several occasions, calling it “one of the really beautiful buildings of the world today” and “the beautiful tower made of bronze that was erected in New York. . . a bronze lady, incomparable in beauty,” which nonetheless “has corsets for fifteen stories because the wind bracing is not seen” and “does not tell the true story of the architecture; it is a facile thing,” that “is not honest, because the wind forces are not being expressed.” See Robert Twombly, ed., *Louis Kahn: Essential Texts* (New York: W.W. Norton, 2003), 57, 69.

<sup>14</sup> Anon., “Form Evokes Function,” *Time* 75 (6 Jun. 1960): 76.

<sup>15</sup> Anon., “Kahn’s Medical Science Building Dedicated at U of P,” *Progressive Architecture* 41 (June 1960): 61.

<sup>16</sup> Quoted in Anon., “Fashioned for the Task,” *Medical Affairs* 1 (Summer 1960): 22.

<sup>17</sup> Anon., “Ten Americans to Watch in 1961,” *Pageant* 16 (Feb. 1961): 60. Johnson’s comments originally appeared in an article published in *Art in America*.

<sup>18</sup> Wilder Green, “Louis I. Kahn, Architect. Richards Medical Research Building,” *Museum of Modern Art Bulletin* 28 (1961): 3. The Committee on Architecture, that certainly had a voice in the development of the exhibition, consisted of architects

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*Times* architecture critic Ada Louise Huxtable, in writing on the impending exhibition, stated that:

it is quite possible that the center of the architectural world today is not one of the familiar international cultural capitals, but a more modest city – Philadelphia. This new and unexpected source of creative vitality focuses on a single remarkable man and an equally remarkable structure: Louis I. Kahn's Richards Medical Research Building for the University of Pennsylvania.<sup>19</sup>

The 1961 Museum of Modern Art exhibition and its immediate aftermath represent the climax of the initial publications identifying Kahn's emerging importance and the significance of the Richards and Goddard buildings project in modern American architecture. An article by Peter Blake on the subject, for example, published in the September 15 issue of *Vogue* that year, foregrounded Kahn and the project for the general public.<sup>20</sup> Only one author, Reynar Banham, found even a minor fault to criticize in the project.<sup>21</sup>

Since the completion of the project in 1965, the understanding of its significance has not lessened, just as Kahn's renown has also continued to grow and deepen. Paul Goldberger's obituary in the *New York Times* lionized the architect at the time of his death as "America's foremost living architect."<sup>22</sup> As early as 1962, while the Goddard Building was still under construction, Vincent Scully, writing in the first published monograph on the architect, proclaimed that "Kahn's achievement of a single decade now places him unquestionably first in professional importance among living American architects."<sup>23</sup> Thirty years after his initial assessment (and nearly twenty years after Kahn's death) Scully's sense of Kahn's importance had only intensified: "Kahn was a supremely great architect. That fact is becoming more apparent with every passing year. His work has a presence, an aura, unmatched by that of any other architect of the present day."<sup>24</sup>

As Scully suggests, the passage of time has, if anything, only served to underscore the superlative assessments made regarding Kahn's work and the Richards and Goddard buildings during the period of their design and construction. One indicator is that the architect's work and these buildings are universally prominent in published surveys of international modern architecture. William Curtis, for example, calls Kahn "the master of monumentality in the United States . . . without a doubt."<sup>25</sup> Kahn's elevated status in the canon of twentieth-century architects is echoed by Spiro Kostof.<sup>26</sup> Carter Wiseman, writing in the context of American twentieth-century architecture generally considered, states that Kahn "produced in a remarkably short time a magisterial

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Philip Johnson, Wallace K. Harrison, and Pietro Belluschi. See also Wiseman, *Louis I. Kahn: Beyond Time and Style*, 102.

<sup>19</sup> Ada Louise Huxtable, "In Philadelphia, An Architect," *New York Times* 11 Jun. 1961.

<sup>20</sup> Peter Blake, "Are You Illiterate about Modern Architecture?," *Vogue* 138 (15 Sep. 1961): 181-1, 214, 218.

<sup>21</sup> Banham's criticism appeared in a two-part series on the relationship between architecture and technology. Having praised the aesthetic of the building in the first part, in the second article he criticizes the design of Richards (not Goddard) on several grounds. Among these are its purported level of innovation in regard to the segregation of volumes by function (in a comparison to Le Corbusier's Pavillon Suisse), and the disproportionate sense of monumentality given to mechanical functions by the prominence of the "served" volumes. See Banham, "On Trial 2: Louis Kahn and the Buttery-Hatch Aesthetic," *Architectural Review* 131 (March 1962): 203-6. The first article, "On Trial 1: The Situation: What Architecture of Technology?," appeared in *Architectural Review* 131 (February 1962): 97-9.

<sup>22</sup> Paul Goldberger, "Louis I. Kahn Dies; Architect Was 73," *New York Times* 20 March 1974.

<sup>23</sup> Vincent Scully, *Louis I. Kahn* (New York: George Braziller, 1962), 10.

<sup>24</sup> Scully, "Introduction," in Brownlee and De Long, *Louis I. Kahn: In the Realm of Architecture*, 12.

<sup>25</sup> William J. R. Curtis, *Modern Architecture Since 1900*, 3<sup>rd</sup> ed. (Upper Saddle River, NJ: Prentice Hall, 1996), 518.

<sup>26</sup> Spiro Kostof, *A History of Architecture: Settings and Rituals* (Oxford: Oxford University Press, 1985), 742.

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body of work that fundamentally redirected the way architectural questions were posed and answered.”<sup>27</sup> Writing on Kahn in a biography, Wiseman articulates the current understanding of Kahn’s legacy, and the fact that, as is the case for Frank Lloyd Wright, Kahn’s work and life are the subjects of publications appearing at an ever-increasing rate:

As time has passed, the names of many of Kahn’s most prominent contemporaries – Wallace Harrison, Edward Durrell Stone, Paul Rudolph, and Philip Johnson among them – have slipped in stature, while Kahn’s has risen steadily. More than a score of books have been written about Kahn’s work.<sup>28</sup>

Thomas Leslie, who devotes substantial amount of space in his *Louis I. Kahn: Building Art, Building Science* to the Richards and Goddard buildings project, noted in 2005 that “no American architect has been more influential in the past quarter century than Louis I. Kahn.”<sup>29</sup>

Arguably, one of the most popular investigations of Kahn and his work to date is the documentary film made by his son Nathaniel entitled “My Architect: A Son’s Journey” (New York Video, 2003).<sup>30</sup> Equally, Kahn has been subject of numerous museum exhibitions. In addition to the 1961 one-building show at the Museum of Modern Art, an exhibition of Kahn’s work as a whole was held in 1966 at the same institution.<sup>31</sup> A major retrospective on the architect was organized by the Museum of Contemporary Art, Los Angeles in 1992, which was shown in Philadelphia, Paris, New York, Japan, and Texas as well as in California. This retrospective was accompanied by the most comprehensive publication on Kahn’s work and life to date, authored by architectural historians David B. Brownlee and David G. De Long.<sup>32</sup>

Kahn has come to be recognized for the significance of a group of both unbuilt designs and built projects in the United States and abroad, as Wiseman’s remark about Kahn’s “magisterial body of work” indicates. These projects encompass a range of types: city planning studies and urban designs, a variety of institutional buildings, public and other “group” housing, and private residences. Among his extant built works, a group of buildings has been consistently identified by critics and scholars as among his key projects. While the recognition of the importance of the Richards and Goddard Buildings has both endured and grown, at least two of Kahn’s projects completed before this project have also come to be part of the core canon of Kahn’s recognized important works. Although these are not necessarily all of Kahn’s projects with potential national significance, chronologically this core group begins with Yale University Art Gallery (1951-1953), followed by Jewish Community Center, Ewing Township, New Jersey (1954-1959; often called “Trenton Bath House”), Richards and Goddard buildings (1957-1965), Margaret Esherick House, Philadelphia, Pennsylvania (1959-1961), Salk Institute for Biological Studies, La Jolla, California (1959-1965), Dr. and Mrs. Norman Fisher House, Hatboro, Pennsylvania (1960-1967), Library and Dining Hall, Phillips Exeter Academy, Exeter, New

<sup>27</sup> Carter Wiseman, *Shaping a Nation: Twentieth-Century American Architecture and its Makers* (New York: W. W. Norton, 1998), 204.

<sup>28</sup> Wiseman, *Louis I. Kahn: Beyond Time and Space*, 8.

<sup>29</sup> Thomas Leslie, *Louis I. Kahn: Building Art, Building Science* (New York: George Braziller, 2005), 2.

<sup>30</sup> Enduring popular interest in Kahn is also in part indicated by hits on the scholarly, web-based database, Philadelphia Architects and Buildings ([www.philadelphiabuildings.org](http://www.philadelphiabuildings.org)). As of April 29, 2008, the web site had received over 47 million hits since July, 2005. Kahn’s biography ([http://www.philadelphiabuildings.org/pab/app/ar\\_display.cfm/21829](http://www.philadelphiabuildings.org/pab/app/ar_display.cfm/21829), written by this author) has been viewed slightly less than 10,000 times, nearly three times more than any other biography on the site, which also includes biographies for American architects working in locations other than Philadelphia. The Richards and Goddard buildings project page is also among the most popular on the site as well.

<sup>31</sup> Exhibitions #688 and #797, respectively.

<sup>32</sup> Brownlee and De Long, *Louis I. Kahn: In the Realm of Architecture*.

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Hampshire (1965-1972), Kimbell Art Museum, Fort Worth, Texas (1966-1972), Yale Center for British Art (1969-1974, completed by Pellechia and Meyers), and Mr. and Mrs. Steven Korman House, Fort Washington, Pennsylvania (1971-1973). Two projects outside of the United States are also part of this group: the Indian Institute of Management, Ahmedabad, India (1962-1974), and Sher-e-Bangla Nagar, Capital of Bangladesh, Dhaka, Bangladesh (1962-1983, completed by David Wisdom & Associates).<sup>33</sup> Several other projects have also received a substantial amount of attention in publication, including First Unitarian Church and School, Rochester, New York (1959-1969), Performing Arts Theater, Fort Wayne, Indiana (1959-1973) and Eleanor Donnelley Erdman Hall at Bryn Mawr College, Bryn Mawr, Pennsylvania (1960-1965).

### **History of the Project**

The genesis of the Richards and Goddard buildings project was quite unusual for a capital project for the University of Pennsylvania in the period, if not for any educational institution before and after. Aspects of the history of the Richards Building portion of the project have been previously documented by a number of authors, and some of the facts of the creation of the Goddard Building phase of the project have also been published.<sup>34</sup> But because the project as a whole, and the institutional circumstances that led to the buildings' creation have not been extensively explored, these bear examination here.

As is typical for most colleges and universities, construction projects before the Richards and Goddard buildings at the University of Pennsylvania resulted from a lengthy administrative process begun either by the identification of an institutional need (for example, for student housing or classroom or laboratory facilities), or by a donor's gift for a pet project. In contrast, the impetus for the Richards and Goddard buildings came through the precipitous arrival of a federal government grant for construction. Further, this money came with the proviso that it be both matched and spent within a very short period relative to the usual amount of time needed for design development, institutional planning and approvals, and fund-raising. The short period for and nature of the planning for the project, as well as the need to raise funds quickly for construction, had substantial impact on the project, particularly on the ultimate form of the Goddard Building.

Penn received the bulk of the funding for the project through the activities and links to the federal government of one member of the University administration: Dr. Norman H. Topping, M.D. (1908-1997), Vice President for Medical Affairs from 1952 to 1958 (a division that included not only the School of Medicine, but also the Graduate School of Medicine, the School of Dentistry, and others). Topping, who had begun his career as a researcher with the United States Public Health Service, helping to develop the first vaccine against typhus and the first effective treatment against Rocky Mountain spotted fever, was named an Assistant Surgeon General in the U. S. Public Health Service and associate director of the National Institute of Health in 1948. Topping left these posts to join the University of Pennsylvania, and remained in Philadelphia until he accepted the presidency of the University of Southern California, where he remained for the rest of his career.

Topping's Washington connections led directly to the funding that sparked the project that would become the Richards and Goddard buildings. In the summer of 1955, Topping and other medical research institution

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<sup>33</sup> In the case of both the Yale Center for British Art and the Capital of Bangladesh, the projects were completed by architects who had worked in Kahn's office for many years: Marshall Meyers and David Wisdom, respectively.

<sup>34</sup> Among the more noteworthy of these is the documentation of the project by Alex Soojung-Kim Pang with Preston Thayer in Brownlee and De Long, *Louis I. Kahn: In the Realm of Architecture*, 324-327. Among more recent extensive discussions of the building worth noting are those by Robert McCarter, *Louis I. Kahn* (New York: Phaidon Press, 2003), in Wiseman, *Louis I. Kahn: Beyond Time and Style*, 94-105, and in Leslie, *Louis I. Kahn: Building Art, Building Science*, 96-105.

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representatives appeared before a committee in the federal House of Representatives to give testimony in support of a Congressional bill. In his testimony, Topping stated that:

My purpose in appearing before you today is to support . . . a practical and feasible way for the Federal Government to participate in the difficult problem of financing medical education. The bill for federal participation in the cost of modernizing and improving our medical schools has long been needed. It is based on the principle of federal funds matching those raised in the local community that has proven so effective under the Hospital-Construction Act of 1947.

There can be little doubt of the construction needs of our medical schools. Most of them have struggled for years in order to meet their yearly operating costs with no funds available for alterations and modernization, to say nothing of urgently needed additions. We have expected them to turn out fine physicians for the care of civilians, for our Armed Forces, for Public Health, and for many other activities.<sup>35</sup>

Eventually, through Topping's and others' efforts, the Health Research Facilities Act of 1956 was signed into law (Public Law 835 of the 84<sup>th</sup> Congress) by President Eisenhower on July 30 of that year. In his signing statement, Eisenhower noted that his authorization of \$90 million for the "three-year program of Federal grants to help in the construction of health research facilities by public and nonprofit institutions" fell short of both the \$250 million and five year program he had wanted.<sup>36</sup> As part of the stipulations of the bill, funding was available to successful applicants on the basis of a 1:1 match.

Wheels were set in motion immediately at the University of Pennsylvania to take advantage of this funding, with Topping again leading the effort. The potential brought to the University by the bill was clearly the topic of faculty and administration conversations before its signing into law.<sup>37</sup> Despite Topping's leadership, the effort to seek funding for construction under the new bill was clearly not under his complete control from the start, since at least two other University leaders immediately jumped into the fray. In early August, 1956, Dr. Francis L. Schmehl, Chief, Health Research Facilities Branch, Division of Research Grants, Dept. of Health, Education, and Welfare, Public Health Service, responded to an inquiry from Dr. Lester Burket, Dean of Dentistry at Penn, thanking Burket for his inquiry of August 2 and noting that "although we have not seen Dr. Topping's letter yet, we do have a letter from Dr. Gaylord P. Harnwell, President of the University, in which a \$3.2 million construction program for research facilities at the university has been outlined."<sup>38</sup> Apparently regaining some measure of command of the process, Topping wrote to Schmehl at the end of that month, outlining the full scope of Penn's plans for applications under the Act. Among the construction projects proposed were plans for "laboratories for the basic science departments and their research programs." Topping noted that "this construction will take the form of a new wing for the School of Medicine."<sup>39</sup> This was the

<sup>35</sup> Typescript of testimony given by Topping before House subcommittee in support of HR 4734, ca. June 1955; Folder "Medical Affairs (Construction Grants) I 1955-1960," Box 91 – Ma – Medical Affairs, Constructions Grants (Hill-Burton Funds, Rehabilitation Center), UPA 4 – Office of the President Records, 1955-1970, Administration of Gaylord P. Harnwell, University Archives, University of Pennsylvania, Philadelphia (collection hereafter cited as UPA 4; University Archives hereafter cited as UPA).

<sup>36</sup> John T. Woolley and Gerhard Peters, *The American Presidency Project* [online], Santa Barbara, CA: University of California (hosted), Gerhard Peters (database), <http://www.presidency.ucsb.edu/ws/?pid=10540>.

<sup>37</sup> For example, Dr. Eugene Prendergass of the Radiology Department wrote to Topping on July 24, after it had passed the Senate, wondering if some money might be pursued for a project currently in planning. Folder "Medical Affairs (Construction Grants) I 1955-1960," Box 91, UPA 4.

<sup>38</sup> Schmehl to Burket, 8 Aug. 1956, Folder "Medical Affairs (Construction Grants) I 1955-1960," Box 91, UPA 4.

<sup>39</sup> Topping to Schmehl, 28 Aug. 1956, Folder "Medical Affairs (Construction Grants) I 1955-1960," Box 91, UPA 4.

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genesis of the Richards Building portion of Kahn's project—originally conceived as a wing on the John Morgan Building, which survives to the present and is connected to the Richards and Goddard buildings on the east. The John Morgan Building had been dedicated as the University's School of Medicine in 1904, and was designed and built by the architectural firm of Cope & Stewardson (the firm created new buildings for all of Penn's schools of medicine, law, engineering, and veterinary medicine in the first decade of the twentieth century).<sup>40</sup> The "Medical Research Wing" would come to be endowed with an independent life as a building in its own right as the project developed.

Topping's August letter stated that in addition to the proposed "new Wing," the University's Medical School would seek funding under the Health Research Facilities Act for the Ravdin Institute for "research facilities for field investigations." This institute was named in honor of Penn's prominent surgeon, I. S. (Isidor Schwaner) Ravdin, and was a project that had been announced in 1954. Ravdin, an important figure in the evolution of the Richards and Goddard project, briefly served as Vice President of Medical Affairs before Norman Topping assumed this post, and he later retook the position after Topping's departure for the University of Southern California. The final project bundled in the University's application was to be "Research facilities for School of Dentistry."<sup>41</sup>

Dr. Topping later recalled that the planning effort behind the Richards Building, the first phase of Kahn's eventual project, had begun in the spring of 1956 before the passage of the Health Research Facilities Act. This suggests that Topping felt assured of having sufficient funds for construction of the project, perhaps with insider knowledge of the likelihood of the bill's passage and of Penn's good chances for securing a grant. Topping confidence certainly also stemmed, in part, from \$500,000 received from the Commonwealth Foundation in May of that year; \$200,000 would eventually be counted as part of the required match for the Medical School's construction campaign under the Health Research Facilities Act.<sup>42</sup> At Topping's request, Dean of the Medical School Dr. John McMitchell established a planning committee from Faculty of Medical School. Dr. William T. Fitts, then an associate professor of surgery, was named chair and the "committee began functioning at once to establish the requirements for a new facility."<sup>43</sup>

Among the committee's members was Dr. David R. Goddard (1908-1985), Professor of Botany in the University's School of Arts and Sciences. The department's headquarters were in John M. MacFarlane Hall, then standing on the south side of Hamilton Walk north of the future location of the Goddard Building. Goddard had presided over the creation of the Division of Biology at the University in 1954, which united the disciplines of botany, microbiology, and zoology. Dr. Goddard became the prime mover behind the second

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<sup>40</sup> George E. Thomas and David B. Brownlee, *Building America's First University* (Philadelphia: University of Pennsylvania Press, 2000), 244.

<sup>41</sup> Topping to Schmehl, 28 Aug. 1956.

<sup>42</sup> Minutes of the Board of Medical Education and Research, 28 May 1956, Folder "Medical Affairs – Medical Education and Research Board, 1955-1960," Box 92, UPA 4; "Medical Development with Assistance under Federal Program PL835," 17 Dec. 1956, Folder "Development – Medical Divisions – General 1955-1960," Box 77, UPA 4.

<sup>43</sup> Topping to Provost Jonathan Rhoads, 16 Oct. 1957, Folder 40, Box 46, I.S. (Isidor Schwaner) Ravdin, 1894 - 1972, Papers, 1912 - 1972, UPT50 R252, (collection hereafter cited as UPT50 R252), UPA. The committee consisted of Norman Topping, who became chair by September of that year, Dr. David Drabkin, Professor in the Department of Biochemistry of the Graduate School of Medicine, William Fitts, Dr. Louis B. Flexner of the School of Medicine, and Dr. Ned Williams of the School of Dentistry. For some unknown reason the committee was not officially constituted by President Harnwell until September 21<sup>st</sup>, 1956. Memo from Harnwell to Drabkin, Fitts, Goddard, and Williams, 21 Sep. 1956, and "Resolution of Planning Committee for the New Wing of the School of Medicine," 9 Oct. 1956, Folder "Medical Divisions – Richards Medical Research Building, 1955-1960," Box 77, UPA4.

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phase of Kahn's Penn project and the individual for whom this second building is now named. It seems likely that his role as part of the planning committee in the fall of 1956 was principally for coordination purposes, although it is possible that even at the inception of the undertaking that new facilities for the Botany Department or even the Biology Division were being contemplated.<sup>44</sup>

By the end of September 1956, the planning committee had arrived at a fairly detailed plan for the "wing," which was conceived of as a narrow, presumably rectangular-plan building, 48' x 210' in footprint and eight floors in height. A resolution of the committee in early October further detailed the initial conception of the building: as approved, their "Plan A" called for their long, narrow building set back 180' to the south of Hamilton Walk, and parallel to it. One of the main features of this plan was to connect the John Morgan Building of the Medical School to the rear of the Zoology Building (presently called the Leidy Laboratories, another Cope & Stewardson Building). This scheme also avoided MacFarlane Hall, which stood between these buildings, with a series of greenhouses to its south. This initial "Plan A" scheme was, of course, very different from the one Kahn would design, and the image of the building as a single, rectangular solid would later haunt the project at several turns.

Interestingly, the planning committee had already determined the departmental occupants of the eventual Richards Building by September of 1956. These were: the Department of Physiology, the Department of Medical Microbiology, the Department of Public Health and Preventative Medicine, the Eldridge Reeves Johnson Foundation (an independent organization established in 1929 within the School of Medicine for research and teaching in the biochemical and biophysical aspects of medicine and biology), and the Harrison Surgical Department.<sup>45</sup> The details of the process whereby these particular occupants were selected are apparently undocumented. It is clear, however, that at least the Medical Microbiology department was so constrained in its quarters in the Medical School as of 1954 that "working conditions are overcrowded to a degree which definitely hampers the efficiency of the work, let alone its expansion. We have every reason to believe that the need for more space will continue through the next five years."<sup>46</sup> The other departments must have been in similar straits.

Equally important, the basis of the calculations that established President Harnwell's project budget for the "Medical Research Wing" included in his August 1956 letter is also unrecorded. Later documents establish the Richards Laboratories building's budget for the purpose of the application developed under the Health Research Facilities Act as \$2.5 million, or approximately \$30 per square foot, according to the total 10,080 square feet that can be derived from the tentative layout for the building created by the committee by September 1956.<sup>47</sup>

Whatever the specific process that led to the formulation of the rudimentary building program and of the budget for the "Wing," the University's application under the Act was completed and sent to Francis Schmehl on November 1, 1956.<sup>48</sup> Remarkably swift action by the reviewers led to initial funding of \$400,000, with

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<sup>44</sup> Ralph O. Erickson, "David Rockwell Goddard. January 3, 1908 — July 9, 1985," *Biographical Memoirs, National Academy of Science*, <http://www.nap.edu/readingroom/books/biomems/dgoddard.html>, accessed 17 Feb. 2008.

<sup>45</sup> "Planning Committee, Tentative Layout," dated 28 Sep. 1956, Folder 38, Box 26, UPT50 R252.

<sup>46</sup> Stuart Mudd, department chair, to Dean John Mitchell, 12 Nov. 1954, Folder "Mitchell, Dean & Office communication, 1954-1955," Box 26, School of Medicine, Department of Medical Microbiology Records, 1926 – 1960, UPC 2.9 MM (collection hereafter cited as UPC 2.9 MM), UPA.

<sup>47</sup> "Medical Development with Assistance under Federal Program PL835," and "Planning Committee, Tentative Layout."

<sup>48</sup> Folder "Medical Affairs (Construction Grants) I 1955-1960," Box 91, UPA4.

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assurances of the full amount requested for the new building forthcoming in the following year.<sup>49</sup>

While certain fundamental decisions were being made in the University's Medical Division about the basic program, size, and budget for the first, Richards Building, phase of the project, the responsibility for the selection of the designer for the buildings lay in other parts of the University altogether. The era in which Kahn received the Richards and Goddard buildings commission marked one in which Penn was building at an unprecedented rate. The choice of architects for the many projects undertaken in the late 1950s moved into the hands of the relatively recently arrived Dean of the School of Fine Arts, G. Holmes Perkins (1904-2004). Perkins, an educator, urban planner, and architect, was brought to Penn in 1951 to remake architectural education in the School of Fine Arts, moving it away from its Beaux-Arts methods that had been firmly established in previous generations, particularly under the leadership of Professor of Architecture Paul P. Cret. Perkins's primary teaching experience before coming to Penn was at Harvard's Graduate School of Design, where, in 1945, he was named the Charles Dyer Norton Professor of Regional Planning and chairman of his department. With the support of Dean Joseph Hudnut and the participation of Walter Gropius, Perkins developed a first-year joint curriculum that brought the three departments of architecture, landscape architecture, and city planning together in a collaborative venture. After his arrival at Penn, Perkins set about transforming the faculty and the curriculum of the school in the collaborative, progressive image of Harvard's G. S. D., recruiting key new faculty members, among whom were architects Robert Venturi and Romaldo Giurgola. Kahn began teaching in the School of Fine Arts (which became a graduate division in 1958, and which is now known as the School of Design) in 1955, and over the course of the next two years, ceased teaching at Yale.

Holmes Perkins's role at the University of Pennsylvania and in the city of Philadelphia went well beyond his leadership of the School of Fine Arts. The minutes of the Trustees' meetings make clear that after his arrival, Perkins joined Philadelphia architect and University Trustee Sydney Martin (1883-1973) in strongly influencing, if not actually making selections of architects for campus projects, first with the nod from President Harnwell and the Trustees, and then with approval from just President Harnwell. Perkins later reported that he was unhappy with the overall quality of Medical School buildings of the time, and that "he and Martin were both interested in securing commissions for university buildings by major architects."<sup>50</sup> In 1955, a subtle but important shift in administrative decision-making in this area laid the foundation for Kahn's selection as the designer of the Richards and Goddard Laboratories project, as well as Perkins's and Martin's choice of Eero Saarinen for a new women's dormitory (Hill House) in the same time period.<sup>51</sup>

Specifically, the stage was set for an administrative decision on the selection of architects for campus projects in June of 1955, when the University's Trustees voted to allow the "Administration of the University be granted blanket authority to select architects and landscape architects as may be required." This was to take place with the proviso that such a selection could be made "after consulting with the Operations and Plant Committee through its Chairman."<sup>52</sup> The chairman was Martin, whose extraordinarily long career spanned the early

<sup>49</sup> University press release, 13 Dec. 1956, Folder "Medical Affairs (General) III 1955-1960," Box 91, UPA 4; Topping to Rhoads, 16 Oct. 1957, op. cit.

<sup>50</sup> Brownlee and De Long, *Louis I. Kahn: In the Realm of Architecture*, 324.

<sup>51</sup> Ibid. Perkins recalled that he and Martin had discussed both Saarinen and Kahn as potential designers for campus projects, and that Martin selected Saarinen for the dormitory project, "leaving Perkins to recommend Louis Kahn."

<sup>52</sup> Report of the Operations and Plant Committee, Stated Meeting of the Trustees, 17 Jun. 1955, Minutes of the Trustees of the University of Pennsylvania (hereafter Trustees' Minutes), Vol. 26 (1954 to 1958), 195, UPA.

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twentieth century to the mid-1960s.<sup>53</sup> He had joined the University's board of trustees in the late 1930s, and headed a committee that authored a 1948 report adopted as Penn's plan for the development of the campus.<sup>54</sup> The effect of this authorization two years later was clear: President Harnwell had approved Perkins's and Martin's selection of architects for ten projects that had been initiated in the interim, including the "Medical Research Wing."<sup>55</sup>

The selection of an architect for the new project had risen to the top of Vice President Topping's priorities by January 1957, and the following month, Dean Perkins recommended Louis I. Kahn as the architect for the new building, with Sydney Martin's blessing. Kahn was then given the commission by President Harnwell.<sup>56</sup> By May 20, Kahn had "developed tentative layouts," which Topping noted might "not be consonant with previous planning" for space allocation for discussion with Dr. Fitts's planning committee.<sup>57</sup>

Kahn's initial scheme had already departed from the planning committee's previous "Plan A" rectangular configuration substantially, and was thus a "radical" departure from the convention of "large horizontal expanses of loft-type floors or repetitive laboratory benches."<sup>58</sup> In fact, the "pinwheel" plan of the arrangement of the building's towers and subsidiary service and circulation stacks was part of Kahn's scheme from the moment it was presented to the committee, and would remain the essence of the project until it was completed.

While the plan had crystallized, the working relationship with his committee client had not, and never would, coalesce. As Dean Perkins later recalled to Carter Wiseman, "'Lou could talk a committee into anything,' . . . [but] the problem was that no one was in overall control."<sup>59</sup> This is not strictly accurate in that Vice President Topping was in charge, but, unfortunately, he was at a distance, and was more a prime mover than someone with whom Kahn could work directly on details. To make matters worse, Topping left the University of Pennsylvania in the summer of 1958, before construction started on the project. As the structural engineer and

<sup>53</sup> For a summary of Martin's career see Sandra Tatman, "Martin, Sydney Errington (1883-1970)," Philadelphia Architects and Buildings web-based database, [http://www.philadelphiabuildings.org/pab/app/ar\\_display.cfm/26691](http://www.philadelphiabuildings.org/pab/app/ar_display.cfm/26691).

<sup>54</sup> Appendix, Minutes of the Stated Meeting of the Trustees, 25 Oct. 1948, pp. 97a-97g, UPA, <http://www.archives.upenn.edu/prindocs/uplan/trusteesmin25oct1948.pdf>. The trustees' committee consisted of, in addition to Martin as chair, Frederic L. Ballard, Orville H. Bullitt, Edward Hopkinson, Jr., and William H. DuBarry. As part of the development of the plan, a group of prominent architects who were alumni of the University were consulted, included James M. Edmunds, Jr., James Kellum Smith, John Harbeson, Roy F. Larsen, and Grant M. Simon, with Martin chairing the architects' committee as well. The plan established as goals, among others, the substantial expansion of the campus into surrounding areas of West Philadelphia and the closure of several public streets within the campus; these would be achieved over the next decades.

<sup>55</sup> Report of the Operations and Plant Committee, Stated Meeting of the Trustees, 7 Jun. 1957, Trustees' Minutes, Vol. 26, 384. These projects were: "Women's Dormitories," which would be named Hill House by Eero Saarinen, \$4 million budgeted; Faculty Dining Club, by Hatfield, Martin & White, now Skinner Hall; Law School Addition, by Carroll, Grisdale and Van Alen; "Medical Research Wing" (Richards Laboratories); Phipps Institute-City Health Center (Graduate Hospital); Dental School Research Wing and Alterations; Ravdin Institute; Nurses' Dormitories, now English House; "Junior Balcony Recreation Lounge;" Ringe Squash Courts. On these projects, see Thomas and Brownlee, *passim*.

<sup>56</sup> Brownlee and De Long, *In the Realm of Architecture*, 324; Unsigned memo to President Harnwell, presumably from Norman Topping, 2 Jan. 1957, Folder "Medical Affairs (General) II 1955-1960," Box 91, UPA 4; Topping to Jonathan Rhoads, 16 Oct. 1957, Folder 40, Box 46, UPT50 R252.

<sup>57</sup> A memo from Topping to William Fitts, 20 May 1957, itemizing matters to be discussed with "Mr. Louis Kahn" provides a *terminus ante quem*. Folder "Medical Divisions - Richards Medical Research Building, 1955-1960," Box 77, UPA4. A file memo, dated 5 May 1957, Folder 36, "Ravdin Institute Medical Science Building / Planning Committee, 1957-1958," Box 46, UPT 50.R252, recorded that "Dr. Ravdin wants to set up a time for a meeting with Mr. Kahn the architect for the Harrison Dept. Space New Bldg. Medical School."

<sup>58</sup> Leslie, *Louis I. Kahn, Building Art, Building Science*, 99.

<sup>59</sup> Wiseman, *Louis I. Kahn: Beyond Time and Style*, 95.

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Kahn's collaborator on the project August Komendant later recalled, the architect was "entirely confused and had no image yet what the laboratory in this new field should be. As I recall, his first question to me was, 'Doctor, what is a medical laboratory?'"<sup>60</sup> At least one member of the Medical Wing committee voiced his reservations (to Medical School Dean Mitchell) almost immediately. Dr. Harry E. Morton, chair of the Department of Medical Microbiology, inquired of his dean, after conferring with a colleague, whether:

an architect or an architectural firm experienced in the construction and equipping of research laboratories had been considered as consultants or in some capacity which would make use of wide experience in the construction of a building such as is contemplated here at the University. . . . I mention this [because of] our experience this morning with Mr. Kahn who just now is visiting our antiquated laboratories to see what kind of work is done in a laboratory and what we would like to have in a laboratory.<sup>61</sup>

To make matters worse, Kahn also became the immediate scapegoat for intramural squabbling over space allocation, as another letter fired off shortly after the May 20 meeting reveals.<sup>62</sup>

Interestingly, the members of the Planning Committee apparently paid little attention to one of the central features of the design: that is, the structural innovations that were the result of Kahn's collaboration with engineer and fellow Estonian native August Komendant (1906-1992), who, as consultant engineer to the structural engineering firm of record for the project, Keast & Hood of Philadelphia, was key in creating the design of the pre-stressed, post-tensioned Vierendeel beam system that is one of the essential elements of the buildings, and one that was celebrated very early on as one of its most significant design aspects.<sup>63</sup>

As plans for the "Wing" progressed and relations with the planning committee lurched forward, the nature of the project had grown substantially by June 1957. Professor Goddard later recalled that he ironed out an agreement with Vice President Topping that month in what he described as "early in the planning" for a number of specific features for a new building for his division. Goddard also noted that he had sought President Harnwell's permission to plan a new botany building around that time, and it seems likely Goddard would have sought Harnwell's general endorsement first. Harnwell made several stipulations to Goddard as part of this. These included the request that "any new building . . . be so designed that it would serve a future biology department" (which was to be formed from the Biology Division created under Goddard's direction in 1954), and that "the building contain adequate class and lecture rooms, so that it could serve the University as well as the department." Topping and Goddard agreed that "the planned medical research building and the new biology building would be a unit with interconnecting corridors" and that "the same architect would design both buildings." Key features of the program had been established by this early date, including a large lecture hall (conforming to Harnwell's directive) and a library in addition to classroom, laboratory, and conference rooms.<sup>64</sup>

By the beginning of the fall semester of 1957, fund-raising for the Biology Building had begun in earnest with

<sup>60</sup> August E. Komendant, *18 Years with Architect Louis I. Kahn* (Englewood, NJ: Aloray Publishers, 1975), 7.

<sup>61</sup> Harry E. Morton to John Mitchell, 22 May 1957, Folder "Mitchell, Dean & Office communication, 1954-1955," Box 26, UPC 2.9 MM.

<sup>62</sup> Stuart Mudd to John Mitchell, 22 May 1957, Folder "Mitchell, Dean & Office communication, 1954-1955," Box 26, UPC 2.9 MM.

<sup>63</sup> See Anon., "Logic and Art in Precast Concrete: Medical Research Laboratory, University of Pennsylvania, Philadelphia, Pa.," 231-238; Anon., "A Theory for the Future," 138-140; Komendant, *18 Years with Architect Louis I. Kahn*, chap. 2; and Leslie, *Louis I. Kahn: Building Art, Building Science*, 96-103.

<sup>64</sup> David R. Goddard to V.P. John L. Moore, V. P. C.E. Tucker, V. P. Henry Pemberton, Folder "Physical Plan," Box 126, UPA 4.

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the commitment of \$1 million to the project from the Longwood Foundation through University Trustee and DuPont family member Lammot DuPont Copeland, following the transmittal of sketches to Copeland prepared by Kahn in consultation with Goddard. A key provision of this promised gift was that matching funds were to be raised by April 30, 1958.<sup>65</sup> Goddard proceeded to prepare his own application under PL835 for federal funds for the Biology Building.

By early October, the grumbling in the Medical School regarding the design of the new “Wing” had escalated to the level of the University Provost, then prominent surgeon (and member of the Medical School faculty) Jonathan E. Rhoads. Rhoads’s objections epitomize the conceptual gap between Kahn and his client. Writing to Topping, Rhoads argued for a more conventional, rectangular plan building, noting that such a plan “permits departments or divisions to be expanded or contracted laterally [and] is very much more flexible.” Rhoads, reflected his conservative, Philadelphia Quaker origins in his approach to architectural style, stating that “I think there is some real question whether it is desirable in this particular part of the campus to introduce a radical departure in architectural style and practice.”<sup>66</sup> While the question of style did not remain at the fore, the issue of plan configuration persisted in the next months as Kahn’s preliminary cost estimate for the building of \$2.9 million resulted in the question of whether a more conventional plan scheme would be less expensive, as well as in some scrambling to cut the project and its budget.<sup>67</sup>

Notwithstanding, “final” plans for the Medical Research Wing were completed, presented, and approved by the planning committee on May 1, 1958, with a set of working drawings completed by May 21.<sup>68</sup> These plans included the interior, concrete-block partitions which Kahn later characterized as “‘just furniture,’ impermanent and expendable,” and which did not correspond to his initial vision of the laboratory floors as collaborative, open “studios” filled with abundant natural light.<sup>69</sup> In this, of course, Kahn embraced a (false) model of scientific research that closely resembled not only the way in which he ran his own architectural office, but the way in which he had been taught architecture at the University of Pennsylvania in his youth. In this, a single, open drafting room space housed all architecture students, who were taught according to the methods of the École des Beaux-Arts. In this, younger students assisted older ones in something like an apprenticeship in which they progressed through the drafting room as they progressed through the architectural program.<sup>70</sup> Kahn was thus not simply drawing on the model of his own professional office practice in envisioning the way in which the Richards “studios” of senior scientists and their graduate student researchers would function collaboratively, but also recalling the way in which he had first begun to learn the essence of his own profession.

As Robert Gutman has most effectively articulated, Kahn never completely abandoned this vision for the Richards Building, despite the reality of what was constructed. During Kahn’s lifetime, views of the interior of the building were virtually never published showing the partitions, and Kahn continued to speak of the building

<sup>65</sup> Norman Topping to Jonathan Rhoads, 16 Oct. 1957, Folder 40, Box 46, UPT 50 R252.

<sup>66</sup> Jonathan Rhoads to Norman Topping, 7 Oct. 1957, Folder 40, Box 46, UPT 50 R252.

<sup>67</sup> See Robert Gutman, “Human Nature in Architectural Theory: The Example of Louis Kahn,” in Russell Ellis and Dana Cuff, eds., *Architects’ People* (New York: Oxford University Press, 1989), 111.

<sup>68</sup> Folders 030.I.C.490.005-007, Louis I. Kahn Collection, Architectural Archives, University of Pennsylvania (hereafter LIK, AAUP).

<sup>69</sup> Anon., “Art Serves Science: Alfred Newton Richards Medical Research Building, University of Pennsylvania, Philadelphia, Pennsylvania,” 154.

<sup>70</sup> The functioning of the architectural student drafting room was described by George E. Thomas, “Old Bottles and New Wine: The University of Pennsylvania’s Fine Arts Building as Exemplum Vertutis,” unpublished lecture, Society of Architectural Historians, Baltimore, MD, 19 Apr. 1997.

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in public in ways that did not acknowledge the changes to his underlying schema.<sup>71</sup>

When bids based on the May design documents were opened in June, 1958, they came in well over the expected figure. Value-engineering by the selected contractor, Joseph Farrell, during the rest of the summer brought the total cost of the building down to \$2.5 million, excluding fees. During the fall of 1958, revised plans were reviewed by the Planning Committee and the figure of \$3.1 million was finalized as the total, all-inclusive budget for the building. Site preparation for the Richards Building began in mid-October 1958.<sup>72</sup>

The poured-in-place concrete work was completed first as construction progressed in 1959, followed by the erection of the pre-fabricated Vierendeel beam system, and then by the brick exterior veneer. This was being put in place by the early fall.<sup>73</sup> By that fall, the building had also acquired its name, after a vote of the Faculty Council of School of Medicine to honor their colleague was confirmed by a decision of the University Trustees. Dr. Alfred Newton Richards reluctantly agreed to the proposal.<sup>74</sup>

Unfortunately, fundraising for the new Biology Building was in a serious crisis by the time of the dedication ceremony of the Richards Building on May 19, 1960, with time running out to match the federal grant awarded to the project. In contrast to the relative ease with which the Medical School had been able to raise the match for their federal grant, Goddard was struggling to come up with the amount necessary to match both the federal dollars and the promised gift from the Longwood Foundation. By May 5, he had nearly \$2.1 million in hand, which was, unfortunately, slightly more than \$400,000 dollars short of the budget Kahn's office had produced for the design essentially completed at that point.<sup>75</sup>

The full set of working drawings for the Biology Building, developed by the end of May, 1960, were for a substantially more ambitious building than was ultimately constructed.<sup>76</sup> The westernmost tower was to have been built on the "served," square plan module established by the Richards design and to have risen to seven stories above grade like those in the Richards Building. The program was also to have included (as recalled by Dr. Goddard in regard to his initial agreement with President Harnwell) a large lecture hall and a two-story library on the third and fourth floors of the two eastern towers. The projecting carrel volumes retained in a simplified version in the final design on the fifth and sixth floors of the laboratory and classroom towers were originally part of Kahn's conception for the library.

During the summer of 1960, with the support of Dr. Ravdin, Dr. Goddard pursued foundation grants for the project to no avail.<sup>77</sup> The University's administration was clearly very unhappy with Kahn's performance on

<sup>71</sup> Gutman, "Human Nature," 122-123.

<sup>72</sup> Anon., "New Research Building Construction to Begin Behind Dorms Next Week," *Daily Pennsylvanian* [University of Pennsylvania student newspaper], 3 Oct. 1958.

<sup>73</sup> The sequence of construction is most clearly documented by photographs taken by the contractor, 03.IV.A.490.12, LIK, AAUP.

<sup>74</sup> John Mitchell to Gaylord Harnwell, 2 Jun. 1959 and Gaylord Harnwell to A. N. Richards, 30 Oct. 1959, Folder "Medical Divisions: Richards Medical Research Building 1955-1960," Box 77, UPA 4. Dean Mitchell noted that "Dr. Richards states that he would prefer not to have the building named for him. However, if the University Administration thinks that this ought to be done and that it represents good policy for the future of the University, he will be governed by our wishes."

<sup>75</sup> David R. Goddard to University vice presidents John L. Moore, Chester E. Tucker, and Henry Pemberton, Folder "Physical Plan," Box 126, UPA 4.

<sup>76</sup> Folder 030.I.C.490.016, LIK, AAUP.

<sup>77</sup> See correspondence in I. S. Ravdin's papers related to his position of Vice President for Medical Affairs, which he assumed after Norman's Topping's departure. Folder "RC-346," Box 2, Vice President for Medical Affairs, Correspondence and

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the Richards Building by the fall of 1960, and the future of the Biology Building project and Kahn's role in it were being discussed at the highest level. The decision was made in September to stop further preparatory work "pending attempts to find new sources of additional funds."<sup>78</sup> The dim view of Kahn held by many in the central administration (including George Turner, Director of Physical Plan) was no doubt reinforced by, if in fact it did not stem from, a rising chorus of dissatisfaction coming from the Medical School about a multitude of major and minor problems, including the failure to complete the building for occupation by the beginning of the fall semester.<sup>79</sup>

The contractor ultimately turned over the Richards Building to the Medical School for occupancy in January 1961. The following month, George Turner reviewed the status of the Biology Building project at Dr. Goddard's request, and made several ominous findings. Turner warned that, in addition to the shortfall for available funds for Kahn's design, the federal grant for the project, which dictated the start date for construction, had already "been extended twice;" no further extensions beyond June 30, 1961 for the letting of construction contracts would be possible. Turner also raised several matters relative to Kahn's scheme and the expense it entailed, noting that "the design of the building creates a high ratio of periphery to area [which] increases the square foot cost not only by the additional amount of exterior wall but also by an increase in heating and air conditioning load." Turner also claimed that "the clear span construction [completed in Richards and planned for the Biology Building] is more expensive than standard concrete construction."<sup>80</sup> The conventional, rectangular plan modernist box building type had come back yet again to haunt Kahn in this project.

Further, Turner raised the question of whether Kahn should be dismissed from the project, or his status changed to associated or consulting architect. Turner also suggested a remedy to the overall budget problem in order to meet the June 30 construction start deadline, since starting over from scratch with a new architect would not allow this to occur. He recommended to Goddard that "the services of United Engineers and Constructors [be] obtained to design, with Mr. Kahn as Consulting Architect, and construct the building, since their manner of operation would permit letting of contracts for excavation and foundations prior to completion of plans for the building itself."

After final attempts in March to raise the needed funds failed, the Executive Board of the Trustees voted in April to bring United Engineers and Constructors in to complete the project, recording that the firm had:

been engaged to expedite the preparation of revised working drawings and to construct the building. The size of the building has been reduced and it is now indicated that the cost of construction will be in the range of from \$1,300,000. The structure as now envisioned will omit the library and a large lecture hall. It is anticipated that these facilities will be constructed at a future date.<sup>81</sup>

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Records, 1937-1983, (hereafter UPC 1.4), UPA.

<sup>78</sup> George Turner to David Goddard, 27 Feb. 1961, and George Turner to Gaylord Harnwell, 19 September 1960, Folder "Physical Plan," Box 126, UPA 4. Turner's brief note, whose subject was identified as "Biology Project," stated that he was forwarding several documents at the University president at Vice President John Moore's request, including the University's contract with Kahn in advance of the September review meeting.

<sup>79</sup> John R. Brobeck to I. S. Ravdin, 16 Sep. 1960, Folder "A.N. Richards Building," Box 2, UPC1.4, UPA. Correspondence in this folder documents multiple complaints by the Medical School faculty, including concerns about the failure of the window glass in storms.

<sup>80</sup> George Turner to David Goddard, 27 Feb. 1961, op. cit.

<sup>81</sup> Executive Board meeting, 14 Apr. 1961, Trustees' Minutes, vol. 27, 444.

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Essentially, in this new relationship to the project, Kahn's firm had lost control over construction management, which ultimately meant that the level of finish detail that had been rigorously adhered to in such elements as the poured-in-place concrete and the quality of the concrete block in the Richard Building were not repeated in the Biology (Goddard) Building. Kahn did remain, however, the design architect for the project. While the relationship between United Engineers and Constructors and Kahn's office was not ideal, and was in fact tense at times, Kahn was able to complete the project, and, ultimately, to exert detailed control over such important spaces as the office and faculty lounge at the top of the "Y" tower.<sup>82</sup>

As suggested by the record of the Trustees' meeting, the design was substantially cut back before construction began, eliminating the planned library and lecture hall. Kahn completed a new set of construction drawings by the end of August, 1961. Among the features that were simplified from the previous scheme was the landscape surrounding the buildings, resulting in the brick plazas and steps that are on site today rather than more elaborate designs, which included semi-circular walls and mandorla-shaped planting beds or berms which recall the work of contemporary landscape architects such as Lawrence Halprin.<sup>83</sup> Work on this part of the project, most of whose design detail is credited to landscape architect George Patton (1920-1991), could not be finished before construction on both buildings was completed early in 1964, and MacFarlane Hall, which stood immediately to the north of the Biology Building, had been demolished.<sup>84</sup>

### Conclusion

It is remarkable that the exceptionally fraught process that resulted in the Richards and Goddard buildings led to a project that is nationally, if not internationally significant. In retrospect, this process seems, instead, a recipe for disaster. To start, the architect was chosen for the work not because of his suitability for the project based on experience in laboratory design or an extended record of campus projects, let alone built work. Instead, his selection was governed by the agenda of an ambitious dean who wanted to make his professional mark on a campus and an institution that was growing by leaps and bounds, and who wished to promote his recently assembled, stellar faculty.<sup>85</sup>

To make matters worse, the impetus for the project arose not out of an identified, carefully examined and developed programmatic need, but through the abrupt arrival of funds that had to be expended to complete a building very quickly. Equally, the second, Biology Building portion of the project probably started from the happenstance of physical adjacency, and thus, like Richards, did not rise from a considered planning process. The Biology Building also had to be constructed rapidly for the same financial reason that affected Richards; unfortunately for the fate of Kahn's design, the School of Arts and Sciences did not have the Medical School's ability to raise the match required by the federal grants. It is one of the great ironies of the project that while its and Kahn's public acclaim were reaching their initial zenith early in 1961, the University administration's opinion of the architect had plummeted to its nadir. His control over the Biology Building project was seriously threatened and the design itself was being substantially reduced from its original conception. Kahn had something close to an individual client in David Goddard, a circumstance in which he fared much better in later

<sup>82</sup> See, for example, correspondence, 030.II.A.box.9.12 and 030.II.A.22.12, LIK, AAUP.

<sup>83</sup> The "as built" drawings are found in 030.I.C.490.17, LIK, AAUP.

<sup>84</sup> "A. Macfarlane [*sic*] Hall on its last day of service," 2 Jan. 1964, Folder 7, Box 1, Album 2, Raymond C. Saalbach Collection, UPX 12 S111, UPA.

<sup>85</sup> It has long been rumored that Perkins promised Kahn a building commission on campus if he joined the University of Pennsylvania faculty, although this is not documented.

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projects.<sup>86</sup> In contrast, the architect not only had to contend with a committee as client in the Medical School, but its leader Norman Topping operated at a remove, and left the institution in the middle of the project. Further, the rancor directed at Kahn by the committee members was exacerbated by internecine battles over such issues as departmental space allocation within the building and the ultimate responsibility for the expense of phone lines.<sup>87</sup>

By the measures of “on time, on target, and on budget,” Kahn’s performance on this project was disastrous, and would have widespread effects on future University of Pennsylvania campus projects.<sup>88</sup> In May 1961, a month after the United Engineers and Constructors take-over of the Biology Building phase of the project, the Trustees adopted a lengthy policy regarding the duties of “University officials” in connection with the “planning, designing, and programming of a new facility” in order to avert the sort of problems brought about by the project in the future. This policy included the following:

In the design of a new facility or major renovations of a present building, irrespective of the source of funds, the following principles will be given first priority:

- (a) The most practical design consistent with the general character of the University and compatible with the specified use.
- (b) Economy of construction compatible with durability and with the objective of obtaining the maximum usable space per dollar.
- (c) Economy of operation with the objective of reducing, as far as possible, the costs of maintenance, repairs, heating and air conditioning.<sup>89</sup>

They clearly did not wish to have a recurrence of the problems caused by the Richards and Goddard buildings project. In the decade after the completion of Kahn’s project, the new construction realized through this process has never been recognized for anything like its national design importance.

The void reflected in Kahn’s question to August Komendant, “Doctor, what is a medical laboratory?,” was one that Kahn filled with a remarkably unified, synthetic, and humanistic vision, whatever its shortcomings in the eyes of his clients (justified or not). The source of the project’s power and significance, and, at least in part, the significance of the work of the architect more generally, was indicated early on by at least two observers. In her article on Kahn on the occasion of the Museum of Modern Art exhibition of 1961, Ada Louise Huxtable concluded by declaring that “it is Kahn’s sensitive reappraisal of architectural objectives that makes his work

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<sup>86</sup> On a different sort of relationship, see Wiseman’s discussion of Kahn’s relationship with Jonas Salk, in *Louis I. Kahn, Beyond Time and Style*, 106 ff.

<sup>87</sup> Dissatisfaction was first discussed in print in David Allison, “Places for Research,” *International Science and Technology* 9 (Sep. 1962): 23. Its most extended investigation is in Gutman, “Human Nature in Architectural Theory.”

<sup>88</sup> Carter Wiseman has recorded that Dean Perkins recounted to him overhearing an unidentified Penn vice president (one of the following: v. p. for business John L. Moore, v. p. for development and public relations Chester E. Tucker, or financial v. p. Henry Pemberton) say that Kahn “will never do another building at Penn.” It should be noted that Wiseman, understanding neither the full chronology of the project nor the details of its financial problems, mistakenly states that “in fact, Kahn had already been asked to do a biology building adjacent to Richards, but when completed it had little of the power of his first effort.” The comment of the unidentified vice president undoubtedly occurred during or shortly after the “tipping point” of the financial crisis over the Biology Building early in 1961, long after Kahn was under contract for this second phase of the project; the lack of “power” of the second building was due not to the character of Kahn’s design, but to its drastic reduction and to its execution by another firm. Wiseman, *Louis I. Kahn: Beyond Time and Space*, 105.

<sup>89</sup> Annual Meeting of the Corporation, 19 May 1961, Trustees’ Minutes, vol. 27, 461.

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important.”<sup>90</sup> Similarly, Vincent Scully, in his *Modern Architecture* of the same year, asserted in regard to the project that “the design enforces human recognition of an environment.”<sup>91</sup>

The phenomenon of this project’s almost instant acclaim – and Kahn’s national and international significance and the role of the Richards and Goddard buildings project in that – has been most effectively addressed by sociologist Robert Gutman. Gutman explores the philosophical underpinnings of the architect’s approach in the most rigorous treatment of this aspect of the subject to date. Framing the subject in the context of contemporary trends, he notes the “widespread dissatisfaction at the time with the program-driven functionalism of international modern architecture,” and “the rebellion against the architectural theories of Le Corbusier and Gropius and [Sigfried] Giedion’s historicist interpretation of the origins of modern architecture.” Gutman relates that:

the profession was searching for an architecture that could accommodate the new types of building construction and environmental control technology. But it was also looking for ideas that would enrich the human qualities of building space and that could connect building to some of the great formal ideas of the architectural tradition. Despite its practical failures, the Richards building exhibited a thrust that encapsulated these concerns. It also tied interest in these issues to theories of human nature and group needs that had been established in American architecture by the buildings of Sullivan and Wright. In harnessing this tradition that had been popular earlier in the twentieth century and rehabilitating an idea of functionalism that was more humanistic than the modern movement had suggested, Kahn offered a vision that was at the same time familiar and original.

Gutman concludes by addressing Kahn’s appeal: “by making Richards into an emblem of his view of the nature of man and social institutions, Kahn became a cultural hero among architects and elevated a medical research laboratory into the architectural canon.”<sup>92</sup>

Thus Kahn, in a sense, was an architectural herald of the humanistic concerns that occupied the decade that began when the Richards and Goddard buildings project was underway, and which continue to be an enduring concern. Given the ongoing and ever-growing interest in Kahn and this project throughout the world, it is certain that the architect’s cultural status is not limited to an architectural audience.

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<sup>90</sup> Huxtable, “In Philadelphia, an Architect.”

<sup>91</sup> Vincent Scully, *Modern Architecture; the Architecture of Democracy* (New York: George Braziller, 1961), 31.

<sup>92</sup> Gutman, “Human Nature in Architectural Theory,” 125-126.

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Previous documentation on file (NPS):

- ☐ Preliminary Determination of Individual Listing (36 CFR 67) has been requested.
- ☒ Previously Listed in the National Register. Contributing resource, University of Pennsylvania Campus Historic District, 1978
- ☐ Previously Determined Eligible by the National Register.
- ☐ Designated a National Historic Landmark.
- ☐ Recorded by Historic American Buildings Survey:
- ☐ Recorded by Historic American Engineering Record:

Primary Location of Additional Data:

- ☒ State Historic Preservation Office
- ☐ Other State Agency
- ☒ Federal Agency
- ☐ Local Government
- ☐ University
- ☒ Other (Specify Repository): Architectural Archives of the University of Pennsylvania; University Archives,  
University of Pennsylvania.

### 10. GEOGRAPHICAL DATA

**Acreage of Property:** Approximately 2.75 acres

UTM References	Zone	Easting	Northing
	18	483040	4421970

#### Verbal Boundary Description:

Beginning at the northeasternmost point of intersection of the Richards Building and the John Morgan Building, proceeding northeast along a line parallel and immediately adjacent to the western façade of the John Morgan Building approximately 75' to a point at the southwest edge of Hamilton Walk. From there, following the southwest edge of Hamilton Walk approximately 370' to the intersection of Hamilton Walk and the western side of a paved walkway perpendicular to Hamilton Walk to the east of the Leidy Laboratory Building. From there, proceeding approximately 190' southwest along the line of the western side of the paved walk until it ends. From there, following a semi-circular unpaved path around the Kaskey Garden Pond approximately 120' to its south until the path meets a service drive to the east of the Anatomy-Chemistry Wing of the John Morgan Building which provides access to the rear of the Richards Building. Following from there the eastern side of the service drive to where it ends near the southeast corner of the eastern laboratory tower of the Richards Building and the western façade of the John Morgan Building. From there returning along the western façade of the John Morgan Building to the point of beginning.

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### **Boundary Justification:**

This boundary encompasses the limits of the design project that created the Richards and Goddard buildings, as well as the landscape setting of the majority of the Kaskey Garden.

DRAFT

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